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ABSTRACT

This information booklet contains the information necessary to administer the annual Department of Defense Dependent Schools Pacific Region Junior Science and Humanities Symposium (JSHS) at the school level. It is intended to be used by teachers and administrators as they manage the JSHS program within their schools and by students as they conduct their research, write about their research projects, and track the various deadlines which must be met as part of the program. A symposium overview, program description, program objectives, themes, awards, eligibility, fees, project guidelines, abstracts, computer use, judging guidelines, oral presentations, poster sessions, and travel are discussed. The appendices contain project writing guidelines, program application forms, abstract forms, and examples of abstracts of research conducted by other Pacific Region JSHS students. (KR)

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Junior Science And Humanities Symposium Program

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Management Guide SY91-92

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DEPARTMENT OF DEFENSE DEPENDENT SCHOOLS
PACIFIC REGION

JUNIOR SCIENCE AND HUMANITIES SYMPOSIUM MANAGEMENT INFORMATION BOOKLET FOR SCHOOL YEAR 1991-1992

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TABLE OF CONTENTS

Subject	Page
Purpose	04
Program Overview	05
Program Description	07
Grade Eight Feeder Program	08
Program Objectives	09
Program Themes	09
Program Awards	10
Participant Eligibility	10
Application Fee	11
School Level Symposium Coordinators	11
Mentors	11
Sponsors	11
Project Guidelines	12
Abstracts	13
Use of Computers	14
Typing of Student Papers	14
Paper Submission	14
Judging Guidelines	15
Oral Presentations	16
Poster Sessions	17
Symposium Timeline	18
Application Form	18
Parental Permission Form	19

Acceptance of Student Participants.....19

Travel Orders.....19

Travel Directions.....19

Food.....20

Lodging.....20

Travel Claims.....21

Tentative Symposium Schedule.....21

Things to Know About Tsukuba City.....22

Appendix A - Abstract Form for JSHS Student Participants.....24

Appendix B - Research Paper Evaluation Form.....25

Appendix C - Oral Presentation Evaluation Form.....26

Appendix D - Poster Session Evaluation Form.....27

Appendix E - Student Application Form.....29

Appendix F - Organization of Student Papers.....30

Appendix G - Example Abstracts.....36

Appendix H - List of Video Tapes To Help Students Prepare.....37

DOCUMENT PURPOSE

The Junior Science and Humanities Symposium (JSHS) Management Information Booklet for School Year 1991-1992 contains the information necessary to administer the annual Department of Defense Dependent Schools Pacific Region Junior Science and Humanities Symposium (JSHS) at the school level. The booklet is published yearly in January by the Department of Defense Dependent Schools Pacific Region. It is intended to be used by high school and middle school administrators, JSHS coordinators, JSHS sponsors and JSHS mentors as they manage the JSHS program within their schools. In addition, it should be used by students as they conduct their research, write about their research projects, and track the various deadlines which must be met as part of the program. The Appendices are especially important to student researchers because they contain project writing guidelines, program application forms, abstract forms, and abstracts of research conducted by other Pacific Region JSHS students. Conducting Student Research, which in previous years was included as Appendix G of this document, is now published under a separate cover.

PACIFIC REGION JUNIOR SCIENCE AND HUMANITIES SYMPOSIUM OVERVIEW

SYMPOSIUM REGIONAL DIRECTOR: Department of Defense Dependents Schools (DoDDS), Regional Science Coordinator

SYMPOSIUM HOST: DoDDS District Superintendent of Schools, Japan

ACTIVITY DESCRIPTION: The symposium is a one week meeting of eighth grade and high school students who have completed experimental research in any of the sciences, mathematics, the humanities or computer sciences. Formal and informal presentations of research findings are made by students, research laboratories at the symposium site are visited, and speakers discuss their research and the importance of research to the future of mankind. The importance of the humanities and a humanistic approach to scientific research are also stressed.

LOCATION: Tsukuba Science City, Japan

TRANSPORTATION ARRANGEMENTS: Arrangements for travel to and from the symposium are made by the middle and high school administrators of the Department of Defense Dependent Schools Pacific Region and the District Superintendent of Schools for Japan.

POPULATION INVOLVED:

1. STUDENT PARTICIPANTS: Students from all Department of Defense Dependent Schools Pacific High Schools and selected 8th grade students.

2. NUMBER OF STUDENTS AND TEACHERS: Approximately 120 per year.

3. GRADE LEVELS: 8-12

SYMPOSIUM DATES: March 30 through April 3, 1992

PROGRAM FUNDING:

1. ATTENDING FACULTY: The symposium operates under a grant from the Academy of Applied Sciences, Concord, NH and the Army Research Office, Research Triangle Park, Raleigh, NC. All expenses are borne by Symposium. Transportation and substitute teacher expenses are paid by Department of Defense Dependents Schools Pacific Region.

2. PARTICIPATING STUDENTS: All symposium expenses are borne by the Symposium. The only cost to students is a $30.00 non-refundable application fee. Transportation expenses are paid by DoDDS-Pacific.

PARTICIPANT SELECTION PROCESS: To be eligible for participation at the Symposium, each student must submit: (1) an application for participation form by December 15, 1991 and; (2) an acceptable, completed research paper reporting the results of experimental research he or she has conducted by January 1, 1992. One copy of the research report stored on a computer disk in AppleWorks or an IBM compatible program must arrive at the Department of Defense Dependent School Pacific Regional Office, and one typed copy of the research paper must arrive at the District Superintendent of Schools Japan office not later than January 1, 1992. Each student's mentor decides whether his or her student has completed the research project to a level sufficient to warrant Symposium participation.

PURPOSES OF THE SYMPOSIUM: The purposes of the symposium program are to: foster critical thinking skills among participants; help students develop an awareness of the inquiry process; expand students' career horizons; provide students experience conducting research as a problem solving method; and provide recognition for those students who have completed an experimental research project.

PROGRAM DESCRIPTION

Each year, beginning on January first, the Department of Defense Dependents Schools, Pacific Region conducts a Junior Science and Humanities Symposium program. Students are invited to conduct original experimental research in the sciences, mathematics, the humanities and computer applications that relate to research in those fields. The research period ends early in the spring of the next school year. Following conclusion of the research period, students, who have completed research projects and the writing of research project papers, spend a week presenting their research to other students, visiting institutes where research is being conducted, participating in Japanese-American cultural events, and a host of other activities. During the week, three top student researchers are selected from the participants. Later in the spring, the selected students travel to the National Junior Science and Humanities Symposium in the United States. There, the top (one of the three) student researcher presents his or her research findings to student researchers from the entire United States. The student presenting his or her paper at the National Symposium competes with other students for an opportunity to attend the International Youth Science Fortnight, usually held in London, England during the following summer. As a result of being selected as the top researcher of the Region, that student is awarded a small scholarship by the U. S. Army Research Office and a chance to compete for larger scholarships at the National Symposium.

GRADE EIGHT FEEDER PROGRAM

The Grade Eight Feeder Program is open to all eighth grade students attending Department of Defense Dependents Schools Pacific Region middle schools, unit schools, and high schools. It is intended to help promising students get started in scientific research prior to entering high school. The program functions as follows:

1. Each high school, unit school, and middle school may select two eighth grade students each year to attend the Pacific Junior Science and Humanities Symposium. While it is not mandatory, it is suggested that one boy and one girl be selected from each school. The final determiners of which students attend, however, are the quality of the experimental research conducted by the participants and the quality of the research paper written by those students. Actual selection of students for participation at the annual Junior Science and Humanities Symposium in Tsukuba City, Japan is accomplished at the respective schools using a process decided upon by school personnel. Eighth grade attendees, however, must have completed an experimental research project and submitted a paper (library research projects are not acceptable).

2. Participating grade eight students must complete an experimental research project, as outlined in this booklet for high school students, exactly and to the same standards as do their high school counterparts. All other requirements listed for high school students also apply to grade eight students.

3. Grade eight students participating in the program will make poster session presentations or participate in the grade eight formal presentations session. Normally, three eighth grade students are selected to make formal presentations.

4. One sponsor, mentor, or JSHS coordinator from each middle school will attend the Symposium provided the school has two students who will also attend. In schools having grades 7-12, grade 8 students will accompany the JSHS school coordinator.

PROGRAM OBJECTIVES

The symposium objectives are to:

1. PROMOTE experimental research in the humanities, the sciences, mathematics, and engineering.

2. PROMOTE an understanding of the significance of research in human affairs, and the importance of using humane and ethical principles in the application of research results.

3. IDENTIFY talented youth and their teachers.

4. RECOGNIZE the accomplishments of participating youth and their teachers.

5. ENCOURAGE the continued research interest and participation in humanities, science, mathematics and engineering by Symposium participants.

6. EXPAND the horizons of research oriented students by exposing them to opportunities in the academic, industrial, and governmental communities.

7. ENLARGE the number of future adults capable of conducting experimental research.

PROGRAM THEMES

The following Symposium themes have been established for school years 87-88 through 94-95. It is not necessary that student researchers direct their investigations toward the theme of the year. The theme should be advertised in the schools by the Junior Science and Humanities Symposium coordinators at the beginning of the program year (January 1 of the previous school year) and at the beginning of the school year. Program themes may stimulate some students, who might otherwise not conduct a research project, to participate in the program.

School Year		Theme
1.	87-88	The World Ocean Our Last Frontier
2.	88-89	Space Challenge of the 21st Century
3.	89-90	Science and Humanities - The Eternal Quest
4.	90-91	The Integration of Science and Technology for Mankind
5.	91-92	Biotechnology - Designs for the Future
6.	92-93	Telecommunications - Conversation with the Stars
7.	93-94	The Cosmic Connection
8.	94-95	Project Civilization

PROGRAM AWARDS

1. STUDENTS:

a. Formal High School Presenters. Three top student researchers are chosen from those students selected (approximately fourteen each year) to make formal presentations.

(1) The three top presenters receive a trip to the National Junior Science and Humanities Symposium held in the continental U.S.

(2) The first place presenter receives a scholarship to the college of his or her choice. The value is usually $500.00.

(3) The first place presenter wins the opportunity to present at the National JSHS.

(4) The first place presenter wins an opportunity to compete for a trip to London.

(5) The first place presenter wins an opportunity to compete for a national scholarship.

b. Grade Eight Formal Presenters. The top grade eight formal presenter is presented with an award which changes from year-to-year.

c. Poster Presenters. Three top presenters are chosen from each poster session. A book of some sort is usually given to each of these individuals.

2. MENTORS: The mentor of the number one high school student in the formal presentation session is awarded a grant to purchase equipment for his or her school. The grant is usually $300.00. In cases where the mentor of a student is not a member of a school faculty, the grant shall go to the high school of the winning student and be spent for equipment in a subject related to the area in which the winning student conducted his or her research.

PROGRAM PARTICIPANT ELIGIBILITY

Participation in the Junior Science and Humanities Symposium program is open to all students attending Department of Defense Dependents Schools, Pacific Region high schools, unit schools, and middle schools (grades 8-12) who are interested in conducting an acceptable experimental research project in the sciences, mathematics, humanities or computer applications that relate to research in those fields. To attend the Symposium, program participants must complete a research project as defined in the other sections of this document.

APPLICATION FEE

A $30.00 non-refundable application fee is paid by each participant who wishes to attend the Symposium. The fee must accompany a students application (due December 15, 1991) for participation in the Junior Science and Humanities Symposium. The payment must be made by check (cash will not be accepted) payable to the Pacific Region Junior Science and Humanities Symposium.

SYMPOSIUM COORDINATORS

A JSHS Coordinator may be assigned by the school administrator (coordinators may be paid under the extra curricular activity program; a decision regarding such payment, however, is at the discretion of the school administrator). Coordinators, when assigned, may also be mentors or sponsors (see Symposium Mentors and Sponsors below). Coordinators insure that the school level JSHS programs function in accordance with the guidelines set forth in this publication; that is, the students of the various mentors meet the necessary time requirements, applications are submitted, application fees are paid, parental permission slips are on file at the school, student papers are submitted and action, when necessary, is taken to have travel orders cut. Coordinators may be from any academic discipline but, preferably they teach science, mathematics, computer science and or humanities subjects. Coordinators also help to locate mentors, like scientists, medical personnel and university professors who are non-school people working in the local community and willing to guide one or more students through their research.

SYMPOSIUM MENTORS

Mentors are people who guide students through their research, helping them to conduct their research consistent with the scientific method and scientific principles, literature searching, and writing their research papers. Mentors may be teachers, school administrators, scientists, medical personnel, mathematicians, computer specialists and others working in the local community. Mentors may also be coordinators and sponsors.

SPONSORS

Sponsors are people who accompany students from their schools to the Pacific Region Junior Science And Humanities Symposium. They also may be coordinators and mentors.

PROJECT GUIDELINES

1. <u>SCIENTIFIC METHOD</u>: The scientific method must be used in all experimental research projects. The method generally consists of: (1)

identification of a problem through observations of the real world or through literature searching; (2) gathering all the pertinent data; (3) formulating an hypothesis or research question (may be more than one); (4) performing experiments to test the hypothesis or gathering data about the research question; (5) interpreting the results of the experiments - usually accomplished through data analysis and comparison of the data with what is already known about a problem; (6) drawing one or more conclusions about the hypothesis or research question/s. Students often conduct library research projects, falsely thinking that such endeavors are a correct application of the scientific method. Generally, such is not the case. While literature searching is generally part of the experimental research process, it is not, in and of itself, acceptable as a Junior Science and Humanities Symposium project. Proper application of the scientific method is stressed heavily when projects are evaluated to determine which ones (therefore who) will be selected for formal presentation at the Symposium.

2. USE OF ANIMALS IN RESEARCH: The use of animals in research projects shall be closely monitored by local school officials. In this regard, the following guidance applies:

a. Unacceptable Projects. Projects leading to the needless killing of animals or in which there is high probability that the research will lead to the death of a research animal are not acceptable as Junior Science and Humanities Symposium research projects.

b. Disapproved Projects. Projects where there is a chance the research will lead to death of research animals should be evaluated by a board of science teachers or other science personal prior to their approval. The board should evaluate the proposal/s to ensure that all possible precautions to prevent death the of a/the animal/s have been taken. If, after evaluation, the board feels there is still a high probability that the death of a research animal will occur regardless of the precautionary measures the project should not be approved.

c. Acceptable Projects. Projects where there is a slight chance that a research animal may die are acceptable but project methods should be scrutinized closely by mentors prior to project approval. All possible precautions should be taken to prevent the needless loss of research animals.

d. Acceptable Projects. Projects where research animals die for no apparent reason are acceptable.

3. RESEARCH PAPER ORGANIZATION: Guidance for the organization of student research papers is provided in Appendix F, Organization of Student Papers and Abstracts.

4. ADDITIONAL GUIDELINES: Additional guidelines for the conduct of high school research is provided in the publication titled, Conducting

Student Research. That publication is published under a separate cover.

ABSTRACTS

1. GENERAL: An abstract shall be written for every paper which is submitted and shall accompany the paper when it is submitted. A form is included in Appendix A, Abstract Forms, for this purpose. That form shall be used. Xerox copies of the form may be made to meet the needs of individual schools.

2. LENGTH: The abstract should be of adequate length to describe the project but should not exceed 175 words.

3. WRITING: The abstract must be typed, single spaced. Hand written abstracts will not be accepted.

4. SUGGESTIONS FOR ABSTRACT WRITING:

   a. Answer Questions. Abstracts should answer the questions; Who; What; Where; When; Why; sometimes, How?

   b. Tense. The past tense and third person should be used to describe completed research.

   c. English Usage. Proper sentence structure and grammar must be used.

   d. Abbreviations. Do not use abbreviations.

   e. Assumption. Assume readers will have a good technical vocabulary.

   f. Specialized Vocabulary. Try to avoid the use of highly specialized words.

   g. Results and Conclusions. State results or findings and conclusions of the research in a clear, concise fashion.

5. EXAMPLE ABSTRACTS: Examples of abstracts are included in Appendix G, Example Abstracts.

6. ADDITIONAL INFORMATION: Additional information about abstract writing is contained in the publication titled, Conducting Student Research. As mentioned above, that document is published under a separate cover.

USE OF COMPUTERS

A computer must be used when the research paper is written. Apple computers and IBM compatible computers are acceptable. If the Apple

computer is used, the AppleWorks program must also be used to complete all of the word processing tasks. Versions 1.2, 1.3, 2.0, 2.1, or 3.0 of the AppleWorks program may be used. When an IBM compatible computer is used, whatever the program used, the filed should be stored in the ASCII format. When files for the paper are setup, left and right margins should be set at 0.5 inches. Figures and Tables whose form would be destroyed by storing them in the ASCII format or are generated by software other than AppleWorks may be stored on the disk in the program format. In this case, the name of the program used should accompany the submission of the computer disk.

TYPING OF STUDENT PAPERS

1. PAPER: To be acceptable, papers must be printed (also see computer instructions above), double spaced. Papers that are not printed double spaced will not be accepted but returned to their authors'.

2. ABSTRACT: When printing the abstract, the form provided in Appendix A is used; also see the "Abstract" section above and Appendix G. Abstracts are printed single spaced. Abstracts not printed on the form provided, not printed single spaced or not adhering the space allocation provided by the form will not be accepted.

PAPER SUBMISSION

1. TIME: Papers should be mailed so they arrive on or before the deadline date listed below in the Symposium Time-line.

2. COPIES: Two copies of the paper shall be submitted as follows:

   a. One printed, double spaced copy to;

   DISTRICT SUPERINTENDENT OF SCHOOLS, JAPAN
   APO SAN FRANCISCO, CA 96328-0005
   AUTOVON 225-3940/3941/3947

b. One computer copy to;

SCIENCE COORDINATOR
DODDS-PACIFIC/EDUCATION DIVISION
FUTENMA BOX 796
FPO SEATTLE, WA 98772-0005
AUTOVON 635-2365/2147/2151

JUDGING GUIDELINES

1. FIRST EVALUATION. All research papers submitted as part of the Junior Science and Humanities Symposium program are evaluated by a team of scientists and other research oriented individuals to determine: (1) the quality of the investigator's research design; (2) the originality of the topic or approach; (3) the level of scientific understanding displayed in the paper; (4) the quality of the paper itself. Approximately fourteen high school participants' papers and three eighth grade participants' papers are selected for formal presentation at the Symposium based this evaluation. Appendix B contains a copy of the Research Paper Evaluation form used for this process. All students whose papers are not selected for formal presentations, make poster session presentations.

2. SECOND EVALUATION (Symposium Presentations).

a. High School (grades 9-12). High school students chosen to present their papers formally at the Symposium are evaluated a second time. This time, oral presentations are made and judged to determine: (1) the quality of the research design; (2) the originality of the topic or research approach; (3) the level of scientific understanding displayed by the presenter; (4) the quality of the presentation. Appendix C contains a copy of the Oral Presentation Evaluation form used for this process.

As a result of this process and the first evaluation, three participants are selected to attend the National Junior Science and Humanities Symposium in the U.S. The composite scores of the two evaluations determine who actually are the three top students. One of the students is selected as the number one researcher and presents his or her paper at the National Symposium.

b. Grade Eight. Grade eight students chosen to present their papers formally at the Symposium are evaluated a second time. This time, oral presentations are made and judged to determine: (1) the quality of the research design; (2) the originality of the topic or research approach; (3) the level of scientific understanding displayed by the presenter; (4) the quality of the presentation. Grade eight students do not present their papers in the same sessions with high school students. In their session, only grade eight students make presentations. The evaluation form used for the oral presentations is found in Appendix C.

The student presenters are rank ordered based upon based upon

the composite scores of the two evaluations. Awards for these students varies from year-to-year.

ORAL PRESENTATIONS

1. PREPARING FOR ORAL PRESENTATIONS: Students often become nervous when they must face an audience. As a result of being nervous, their presentations, which might have otherwise been well done, turn out poorly. Practice presentations made to a group of student friends, while the presentation is video taped, may help student presenters overcome some of their fears, nervousness and the like. Once students have had their presentations taped, they should: (1) view the tape to see actually what the audience saw when the presentation was made; (2) ask fellow students to view the tape with them and suggest ways to improve the presentation; (3) have mentors, sponsors, coordinators and teachers view the tape and make suggestions for improvement. For the best possible results, this process should be repeated several times.

2. USE OF VISUALS: Slide and overhead projections may be used during presentations. Visuals must be easily readable at the back of a large lecture hall. Visuals should numbered plainly so that if one needs to be shown again it can be easily and quickly located. Students often use visuals that cannot be adequately seen by a large portion of their audience. Use of visual aids that cannot be seen by adequately by everyone, detracts from a presentation.

3. TIMING OF PRESENTATIONS:

a. Grades 9-12. Grades 9-12 formal presenters are allowed 15 minutes to make their presentations. Speakers must stop at the end of 15 minutes even though they have not completed their presentation. They will be given a three minute warning by the program moderator following 12 minutes of presentation. At the conclusion of a presentation, each presenter will be allowed a 10 minute question and answer period to answer questions asked about the research project by the judges and the audience. During the question and answer period, the audience is free to ask questions only about the research project, the presenters suggestions for additional research in his or her field of investigation and similar related matters.

b. Grade 8. Grades 8 formal presenters are allowed 12 minutes to make their presentations. Speakers must stop at the end of 12 minutes even though they have not completed their presentation. They will be given a three minute warning by the program moderator following 9 minutes of presentation. At the conclusion of a presentation, the presenter will be allowed 5 minutes to answer questions asked about the research project by the judges and the audience. During the question and answer period, the audience is free to ask questions only about the research project, the presenters suggestions for additional research in his or her field of investigation and similar related matters.

POSTER SESSIONS

1. GENERAL: Three or more poster sessions are held during the Symposium.

2. POSTER SESSION PARTICIPANTS: All students not selected to make formal presentations are expected to make poster presentations.

3. POSTERS:

a. Size: Posters should be about one meter long and one meter wide.

b. Composition: Posters should summarize a research project, showing, in the most vivid way possible, the important aspects of the project. They should include:

(1) Research Project Title.

(2) Researcher's Name.

(3) Methods. Research methods used during the project should be included.

(4) Results. Results should be presented using photographs, Figures, Tables, and a minimum of text.

(5) Conclusions. The conclusion(s), being perhaps the most important part of the research, should be related to the experimental results. The amount of verbiage should be limited and written in clear, correct, standard English.

c. Color: Intelligent use of color can make the difference between a monotonous display and one that says, "For something interesting, come over here."

d. Crowding: Be careful not to crowd the poster with too much data. Consider providing interested individuals with a copy of the research study abstract rather than trying to force everything about the project on one poster!

e. Evaluation: Posters are evaluated by sponsors. Judges use the form included in Appendix D, Poster Session Evaluation Form for the judging process. First, second and third place projects are selected, for each poster session, as a result of this process.

4. POSTER SESSION LENGTH: Poster sessions last approximately one hour. Each student who is presenting a poster is assigned to one of the sessions and has the other sessions free to visit with other poster session presenters. During the session to which a person is assigned, he or she is expected to make mini-presentations to students and others interested in learning about his or her research.

SYMPOSIUM TIME-LINE

1.	January 1, 1991	Students begin research projects.
2.	December 15, 1991	Students submit:
		a. Applications for participation in JSHS to the Regional science coordinator.
		b. The $30.00 non-refundable application fee to the Regional science coordinator.
		c. One copy of "Parental Permission for School Activity" DSP Form 105 or equivalent to the school JSHS coordinator.
3.	January 1, 1992	Students submit:
		a. Computerized copy of their abstract and research paper to the Regional science coordinator.
		b. Printed copy of their abstract and research paper to District Superintendent of Schools, Japan.
4.	March 30-April 3, 1992	Regional JSHS at Tsukuba City, Japan.
5.	May 1992	National JSHS, U.S.
6.	July 1992	International Youth Science Fortnight, London, England

APPLICATION FORM

A copy of the Junior Science and Humanities Symposium application form is included in Appendix E. Xerox copies of the form should be made to meet the needs of individual schools.

PARENTAL PERMISSION FORM

Parental permission to attend the Symposium must be obtained before a student can attend the Symposium. Permission is obtained by having the attendees' parents complete, "Parental Permission for School Activity," DSP Form 105 or equivalent. Completed forms for attending students shall be retained by the administration of the students' respective schools.

ACCEPTANCE OF STUDENT PARTICIPANTS

Acceptance of a student who has submitted an application to attend the Symposium is based upon the quality of the work done by the applicant. The determination of whether or not a student's work, both research and final research report meets acceptable standards based upon the information published herein, is made at the student's school by his or her mentor. Once the conduct of a research project and the written research paper have been deemed acceptable, by an applicants mentor, and forwarded to the Regional Office and DSO Japan, that student is accepted for attendance at the symposium.

TRAVEL ORDERS

1. SPONSORS: Travel orders are issued for sponsors by school administrators in accordance with guidance set forth for Region approved events. Sponsors' temporary duty orders shall include the following statement in block 16 of (Department of Defense) DD Form 1610, "Limited per diem of $3.50 per day is authorized from 1500 hours 30 March 1992 through 1200 3 April 1991. Full per diem is authorized for the remainder of the temporary duty period." Use of commercial foreign air carrier, may be authorized by the respective district superintendents of schools in emergency situations. Otherwise Military Airlift Command (MAC) shall be used. Where necessary, rail and bus transportation may be used. If additional funds are required for Region approved events, a request for amendment to DSPA Form 7001 should be made to the Pacific Region finance officer.

2. STUDENTS: Travel orders similar to those used for student travel to athletic events shall be issued to student Symposium participants.

TRAVEL DIRECTIONS

1. <u>YOKOTA AIR BASE ARRIVAL TIMES</u>: Yokota Air Base Military Airlift Command (MAC) terminal tentative arrival times, flight numbers and arrival dates for students and sponsors traveling via MAC to attend JSHS should be forwarded, as soon as possible by telephone, to District Superintendent of Schools, Japan at AUTOVON 225-3940/3941/3947.

2. MEETING ARRIVING JUNIOR SCIENCE AND HUMANITIES SYMPOSIUM ATTENDEES: A Department of Defense Dependent schools representative will attempt to meet all incoming flights based upon information provided as directed in paragraph 1 of this section. If your flight is not met, you should call Takashi Suyama by telephone at 0425-45-4894 or 225-3940/3941/3947.

3. YOKOTA AIR BASE DEPARTURE: Buses will depart for Tsukuba City from the Yokota Officer's Club parking lot at 1100, 30 March 1992.

FOOD

1. STUDENTS' RESPONSIBILITY: Students are responsible for all food costs incurred following their departure from home and prior to the evening meal, 30 March 1992. They are also responsible for purchasing their own food following the noon meal on 3 APRIL 1992 until they arrive home again.

2. SYMPOSIUM MEALS: Food is provided free to all participants during the Symposium period.

LODGING

1. EARLY ARRIVAL AT YOKOTA AIR BASE: Sponsors and students arriving at Yokota Air Base prior to the 30 March departure for Tsukuba City will be provided lodging at Yokota High School or some similar location. Travelers should bring:

a. Sleeping bags.

b. Towels.

c. Shower shoes.

d. Bathrobe.

2. LATE DEPARTURE FROM YOKOTA AIR BASE: Sponsors and students departing Yokota Air Base on Saturday or Sunday after the Symposium will be provided lodging at Yokota High School or some similar location.

3. STUDENTS, SPONSORS AND THE BOQ: Sponsors and their students wishing to make BOQ reservations at the Yokota Air Base BOQ for the period before their departure for Tsukuba City and following their return from Tsukuba may do so by calling the Yokota Billeting Office at AUTOVON 225-7326. Reservations will not be made for anyone by District Superintendent of Schools Japan personnel. The cost of such lodging is the responsibility of the traveler. Takashi Suyama must be notified at AUTOVON 225-3940/3941/3947, two weeks prior to your arrival, if BOQ reservations have been made for the group from your school. Notification is essential since berthing space is arranged

for early arrivals and late departures based upon the numbers and at a cost to the Symposium. Failure to use the space arranged for this purpose causes the Symposium to incur higher than necessary operating costs. Those costs may be passed on to your school.

TRAVEL CLAIMS

All sponsors must file a travel claim, DD Form 1351 within five working days following the completion of travel. A copy of the form is provided at the Symposium. The forms are filed in accordance with procedures used by the base to which your school is attached.

TENTATIVE SYMPOSIUM SCHEDULE

March 30, 1992 (Monday)

1100	Depart Yokota Air Base
1500	Arrive Tsukuba Training Center, Check In
1600	Sponsors Meeting
1800	Banquet at University Hall
2300	Lights Out

March 31, 1992 (Tuesday)

0715	Breakfast
0830	Depart for Tsukuba Training Center
0845	Poster Session One
0945	Poster Session Two
1045	Poster Session Three
1145	Depart for Lunch
1300	Depart for Field Trip
1700	Sponsors Meeting
1800	Dinner
1900	Grade 8 Formal Presentations
2000	Free Time
2300	Lights Out

April 1, 1992 (Wednesday)

0715	Breakfast
0845	Depart for Tsukuba Training Center
0900	Student Presentations
1145	Depart for Lunch
1245	Depart for Field Trip
1630	Depart for Mr. Inaba's House and Cultural Cultural Exchange Program
2300	Lights Out

April 2, 1992 (Thursday)

0715	Breakfast
0815	Sponsors Meeting
0845	Depart for Tsukuba Training Center
0900	Student Presentations
1000	Key-Note Speaker
1030	Student Presentations
1145	Depart for Lunch
1245	Depart for Field Trip
1800	Dinner
1930	Possible Student Party or Free Time
2300	Lights Out

April 3, 1992 (Friday)

0715	Breakfast
0830	Sponsors Meeting
0845	Depart for Tsukuba Training Center
0900	Closing Ceremony
1130	Lunch
1300	Depart for Yokota Air Base

THINGS TO KNOW ABOUT TSUKUBA CITY AND THE TRAINING CENTER

1. MONEY: It is difficult, in the Tsukuba area, to change dollars to yen! Symposium participants should plan accordingly, bringing as much yen as they think they will need.

2. TOWELS: The Tsukuba City training center, where Symposium participants are lodged during their stay, does not provide towels with the rooms. Participants must bring their own towels.

3. DRESS:

a. Students:

(1) Dress-up the first night for the banquet.

(2) Dress-up during formal presentations.

(3) Dress-up during poster presentations.

(4) Bring casual and cool weather clothing, its not too late for snow in this part of Japan.

b. Sponsors;

(1) Be prepared to introduce your students to the audience if they are making formal presentations. Also, be prepared to

introduce your students to all Symposium participants at the banquet on the first night of the Symposium.

(2) Bring casual and cool weather clothing.

4. ROOMS: Each sponsor and each student has an individual room. Sponsors' rooms are in the same areas on the same floors as the rooms of their students.

5. FOOD: Food at the Training center is Japanese style. There are many local establishments where other types of food may be purchased. Such purchases, however, are at the individual's own expense.

6. TRAINING BATHING STYLE: The training center is set up in traditional Japanese style with a community bath and showers for men and a separate community bath and showers for women. Hot water is usually on only during specified hours. Those hours are announced at the beginning of the Symposium and are ample to accommodate everyone.

APPENDIX A
ABSTRACT FORMS

Identify area of research (for judging purposes)

NAME:
HOME ADDRESS:
SCHOOL:
SPONSOR/TEACHER:
TITLE:

ABSTRACT FORM FOR NATIONAL JSHS STUDENT PARTICIPANTS

Everyone who attends the National JSHS receives a book that includes 1 to 1 photographic reproductions of the abstracts typed within the above borders. There is no editing of the submitted abstract; therefore, one should make sure there are no careless mistakes such as typographical errors or misspelled words and that the abstract is clearly and concisely written.

A good abstract can be written by proper condensation of a full length, carefully structured research paper. The abstract should accurately convey the essential nature of the research conducted and the most significant conclusions reached. In the context of the National JSHS, a further purpose of the abstract is to attract the interest and curiosity of the non-specialist reader and thus to encourage exchange, discussion and elaboration between various authors and between authors and readers.

INSTRUCTIONS: Employ a typewriter using type of a standard style (such as IBM Prestige Elite 72, 12 letters/inch). Use the spacing and capitalization style shown by examples on the reverse side of this sheet. If any diagramming is necessary, do it in black ink. If a machine with special characters is not available, black ink should be employed. The typing must be single-spaced. The abstract should be of adequate length but not exceed 175 words. Only the material contained within the border lines will be photographed.

DO NOT SUBMIT A PHOTOCOPY OF THIS FORM TO THE NATIONAL JSHS OFFICE. ABSTRACTS MUST BE SUBMITTED ON THIS FORM WITH THE BLUE BORDER.

BEST COPY AVAILABLE

Example of 100-word Abstract

NAME: Glick, Gary
HOME ADDRESS: 20 Surrey Road, Somerset, New Jersey 08873
SCHOOL: Franklin Township High School
SPONSOR/TEACHER:
TITLE: Characterization of Medieval Window Glass by Neutron Activation Analysis

The concentrations of 15 component oxides in medieval stained glass were determined by instrumental thermal neutron activation analyses. Three groups of glass were studied: 52 specimens from a set of 13th century French grisaille panels from a demolished royal chateau at Rouen; 10 samples from a grisaille panel in the collection of the Princeton University Museum of Art; and a set of 32 random fragments of varied provenance.

Significantly differing compositions were found. However, specimens from within individual and related groups of panels are compositionally similar even for different colors of glass, indicating a common origin for the related pieces.

Example of 175-word Abstract

NAME: Kornfeld, Stephen Kerry
HOME ADDRESS: 50 Villa Coublay, Frontenac, Missouri 63131
SCHOOL: Horton Watkins High School
SPONSOR/TEACHER: Charles Smith
TITLE: A Determination of the Oligosaccharide Binding Specificity of Lectins from Pisum sativum and Lens culinaris

Lectins agglutinate red blood cells by binding to cell surface glycoproteins. The lectins recognize and bind to the sugar portions of the glycoproteins. Because different lectins are specific for different sugar sequences, lectins are useful tools for fractionating and isolating glycoproteins. This study was to determine the precise oligosaccharide binding of the pea (Pisum sativum) and the lentil (Lens culinaris) lectins. The lectins were covalently bound to an insoluble support, Sepharose, which was suitable for affinity chromatography. A variety of radioactively labeled glycopeptides with different oligosaccharide structures were tested for binding to the lectin affinity columns. The conclusion is that affinity binding to the pea and lentil lectins requires at least two α-linked mannose residues that are not substituted at positions 3, 4, or 6 as well as the fucose residue. While the mannose and fucose residues are essential for high affinity binding, neither sugar residue by itself is sufficient for binding. With this information, these two lectins can become useful tools for fractionating the glycoproteins of animal cells.

APPENDIX B
RESEARCH PAPER EVALUATION FORM

Junior Science and Humanities Symposium

Name of Student: _____

Title of Presentation: _____

_____

RESEARCH PAPER EVALUATION

POINTS		CRITERIA
_____	40	I. Quality of Research Design
		a. Statement and delineation of problem
		b. Identification of variables
		c. Recognition of limitations of measurements
		d. Adequacy of data (amount)
		e. Statistical analysis appropriate to *high school*
_____	20	II. Originality of Topic or Approach
		a. Suitable subject for high school research
		b. Personal work vs. professional help
		c. Originality vs. laboratory manual report
_____	25	III. Scientific Understanding Displayed
		a. Emphasis on significant vs. trivial
		b. Objectivity
		c. Scientific vs. value judgments
		d. Recognition of the limitations of the study
		e. Conclusion based on data.
_____	15	IV. Quality of the Paper Itself
		a. Title page
		b. Table of contents
		c. Summary or abstract
		d. Introduction
		e. Discussion
		f. Conclusions/recommendations
		g. Acknowledgements
		h. References (Note: Many schools do not have extensive libraries)
		i. Display of data
		j. General clarity of expression
_____		Total Points
		Comments:

_____

Signature of Evaluator Date

DoDDS-Pacific Region in cooperation with U.S. Army Research Office

APPENDIX C
ORAL PRESENTATION EVALUATION FORM

Junior Science and Humanities Symposium

Name of Student: _____

Title of Presentation: _____

_____

ORAL PRESENTATION EVALUATION

POINTS		CRITERIA
_____	25	I. Quality of Research Design
	_____	a. Statement and delineation of problem
	_____	b. Identification of variables
	_____	c. Recognition of limitations of measurements
	_____	d. Adequacy of data (amount)
	_____	e. Statistical analysis appropriate to ***high school***
_____	10	II. Originality of Topic or Approach
	_____	a. Suitable subject for high school research
	_____	b. Personal work vs. professional help
	_____	c. Originality vs. laboratory manual report
_____	35	III. Scientific Understanding Displayed
	_____	a. Emphasis on significant vs. trivial
	_____	b. Objectivity
	_____	c. Scientific vs. value judgments
	_____	d. Recognition of the limitations of the study
	_____	e. Conclusion based on data.
_____	30	IV. Quality of the Presentation
	_____	a. Introduction
	_____	b. Discussion
	_____	c. Conclusions/recommendations
	_____	d. Acknowledgements
	_____	e. References (Note: Many schools do not have extensive libraries.)
	_____	f. Display of data
	_____	g. General clarity of expression
_____		Total Points
		Comments:

_____

Signature of Evaluator Date

DoDDS-Pacific Region in cooperation with U.S. Army Research Office

APPENDIX D

POSTER SESSION EVALUATION FORM

JUNIOR SCIENCE AND HUMANITIES SYMPOSIUM

POSTER SESSION EVALUATION FORM

Name of Student: _____

Research Project Title: _____

_____

Note! All items in the criteria column are evaluated both on the students poster and on his or her informal presentation to fellow students and others.

POINTS		CRITERIA
_____	_____45_____	I. Quality of Research Design
	_____	a. Is the problem well stated and delimited?
	_____	b. Are the variables identified?
	_____	c. Is there a recognition that measurements are limited?
	_____	d. Are the data sufficient enough to support decisions that were made?
	_____	e. Is the statistical analysis appropriate to the experience of the student researcher?
_____	_____25_____	II. Originality of Topic or Approach
	_____	a. Was the research topic suitable for grades 8-12 research?
	_____	b. Is there evidence that the majority of the work was accomplished by the student?
_____	_____30_____	III. Scientific Understanding Displayed
		a. Were significant details emphasized?
	_____	b. Was the researcher objective?
	_____	c. Were limitations of the study recognized?
	_____	d. Were conclusions based upon evidence?

Name of the Evaluator _____

APPENDIX E
STUDENT APPLICATION FORM

PACIFIC REGION JUNIOR SCIENCE AND HUMANITIES SYMPOSIUM

STUDENT APPLICATION

DIRECTIONS

A. Provide a complete answer in each blank.
B. Forward with a check in the amount of $30.00, payable to the Pacific Region Junior Science and Humanitites Symposium

1. Name & Student Identification Number:_____

_____

2. Grade:_____

3. Sex:_____

4. School Name:_____

5. Home Mailing Address:_____

_____

6. Home Telephone Number:_____

7. Mentor's Signature:_____

8. Principal/Asst. Principal Signature:_____

_____

9. Mail To: Science Coordinator
DoDDS-Pacific/Education Division
Futenma Box 796
FPO Seattle 98772-0005

APPENDIX F
ORGANIZATION OF STUDENT PAPERS

ORGANIZATION OF STUDENT RESEARCH PAPERS

Research papers should include the following sections: Title, Abstract, Introduction, Methods or Procedures, Data or Findings, Discussion, Conclusions, Recommendations For Further Research, Literature Cited.

1. TITLE: The title is often the first item seen by potential readers. It should be concise and as specific as possible. Titles should be written such that readers are convinced they should continue on and read the Abstract. Some examples of titles meeting these criteria follow:

   a. Determination of the Activation Energy and Order of Reaction for a Lightstick

   b. The Effects of Slopes and Reefs on Water Waves

   c. Ultraviolet Weathering of Polypropylene as an Example of a Photo-Chemical Process as a Function of Color

   d. Mitotic Activity Associated with the Initiation of Budding in Hydra

2. ABSTRACT: Abstracts are usually found at the beginning of research reports. They provide readers with an overview of the research described in the report. Writers cite their research methods, findings and conclusions in this section using sufficient detail to convince readers that the entire report should be read. Some example abstracts can be found in Appendix G.

3. INTRODUCTION: A number of items are included in the Introduction section. First, what is already known about the research topic or problem, as reported in the literature, is described. As part of the description, the literature (report, article or book) containing the information from which the description originates, is cited. Citations here, and in other sections of the report, may be in one of two forms: (1) Jones (1949) found that.....; (2) It was noted that.....(Jones 1949). If readers want additional information about the work of Jones, they go to the Literature Cited section of the report to locate the complete citation for Jones' work. Some additional examples of citations are provided at the end of this section.

   The second item in the Introduction section is the rationale for conducting the study (why was the study conducted?). If a rationale cannot be identified, the study should not have been conducted.

   The third area in the section are hypotheses or research questions. These are the hypothesis/es a researcher intends to either accept or reject as a result of the analysis research data, or they are the research questions to be answered as a result of the project. Hypotheses and sometimes, research questions have a statistical link; that is, a certain level of statistical significance is assigned to

acceptance or rejection of an hypothesis or question. An hypothesis, for example, might be accepted at $p<0.05$ meaning that the probability of the observed phenomenon occurring by chance is less than five chances in 100. For additional discussion of hypothesis and research questions, consult the publication titled, Conducting Student Research.

All of the areas covered in the Introduction should be linked.

a. Schlitz and Bud (1991) stated their research produced little support for the conclusions drawn by Chesterfield (1990).

b. Evidence collected over the past forty years suggests the present atmospheric warming trend is occurring outside of normal atmospheric cycles (Miller 1990).

4. METHODS OR PROCEDURES: The methods or procedures used to conduct the research are described in this section. They should be reported as exactly as possible in a step wise manner. This section should be written specifically enough so that the research project could be replicated by someone not involved with the original project. Papers written to this degree of specificity are a credit to their writers, while papers reporting research studies that cannot be replicated are not worth reading. Figures which help describe the procedures may be included here. When included, the word "Figure" begins with a capital letter and is placed at the bottom of the Figure. An example follows:

Figure 1. Atypical Arrangement of the Distilling Column.

5. DATA OR FINDINGS: The results of the research are reported here. They are described in writing and may be supported by the inclusion of tables and figures. The inclusion of tables and figures as the sole method of reporting research findings, without the inclusion of a written description of the findings is not an acceptable method of reporting study results. While tables and figures may be used to provide visual overviews of findings, research results must be presented in writing. When tables are used, table titles are printed above the tables and the word, "Table," is always capitalized. When a table is discussed in the report, the word, "Table," is capitalized. The titles of figures are always printed under the figures. The same capitalization rules apply of the word, "Figure," as apply to the word, "Table." See the example figure above and the table below.

Table 1

33

Hourly In Tide Pool Temperatures For Southwest Harbor
30 August 1990

Location	Time	Temperature(C)

6. DISCUSSION: Research findings are discussed here. Relationships between the findings and what is already known about the research problem should be discussed and links noted if they exist. What is already known about the research area was reported generally in the INTRODUCTION section. Thus, there should be a relationship between the DISCUSSION section and the INTRODUCTION section. Hypotheses or research questions are also discussed here and the discussion should take into account the research findings.

7. CONCLUSIONS: Researchers draw conclusions about research projects in this section. Conclusions should be based upon information presented in the DATA or FINDINGS section. This is often the place where hypotheses are either accepted of rejected based upon preset levels of statistical significance. Conclusions about research questions, when research questions are used in a study, are also made here. An important point to remember is that all conclusions made here are based upon evidence.

8. LIMITATIONS OF THE STUDY: Any limitations which effect the generalizability of the research results are included here. Statistical techniques used to manipulate the data, for example, may not have been what they should have been. In such a case readers should be cautioned about the effect this could have on the application of the study results to other situations. Some of the treatment effect might have been caused by a random, uncontrolled intervening variable. Again, the reader should be made aware of this possibility. Other factors, over which the researcher had no control, that might have influenced the study outcomes, should be mentioned.

8. SUGGESTIONS FOR FURTHER RESEARCH: This is a list of suggestions which can or should be accomplished by additional research projects to help us better understand the area of research investigated in the present report. Additional research could answer questions either central or peripheral to the research discussed in the report.

9. LITERATURE CITED OR REFERENCES: This a list of complete citations for every article cited in context. Citations are usually listed alphabetically by the authors' last names. When an author is cited more than once, his or her works are usually listed with the earliest publication date first. In cases where two or more articles by the same author published during the same year are used, small letters

follow the date, starting with "a" and proceeding (1987a, 1987b). The letter is included both here and in the report when the work of that author is discussed (see examples of dates in the INTRODUCTION section). If an article or a text is not cited in the report, it should not be included here. Some examples are provided below.

REFERENCES

1. ADAPT, Multidicsiplinary Piagetian-Based Programs of College Freshmen. Lincoln Nebraska: University of Nebraska-Lincoln, 1978.

2. Dale, L. G. The growth of systematic thinking: replication and analysis of Piaget's first chemical experiment. Australian Journal of Psychology 20:227, 1970.

3. Elkind, D. Quantity conceptions in junior and senior high school students. Childhood Development 62:552, 1961.

4. Good, R., and G. Morin. Math and logic skills exhibited by college chemistry students. A paper presented to the National Association for Research in Science Teaching, 51st Annual Meeting, Toronto, Canada, March 1978.

5. Inhelder, B., and J. Piaget. The growth of logical thinking from childhood to adolescence. New York: Basic Books, 1958.

6. Karplus, R. Science curriculum improvement study: teachers handbook. Berkley, CA: Lawrence Hall of Science, 1974.

7. Lovell, K. A. A followup study of Inhelder and Piaget's growth of logical thinking. British Journal of Psychology 52:143, 1972.

8. McKinnon, J. W., and J. W. Renner. Are colleges concerned with intellectual development? American Journal of Physics 39:1047, 1971.

9. Schlenker, R. M., and C. M. Perry. The molar concept a Piagetian-oriented learning cycle. Journal of College Science Teaching 431, May 1983.

10. Tomlinson-Keasey, C Formal operations in females aged 11 to 54 years of age. Developmental Psychology 6:364, 1972.

11. Watson, P. C. Peason about a rule. Quarterly Journal of Experimental Psychology 20:273, 1968.

APPENDIX G
EXAMPLE ABSTRACTS

ABSTRACTS OF OUTSTANDING STUDENT PAPERS OF JSHS 1986

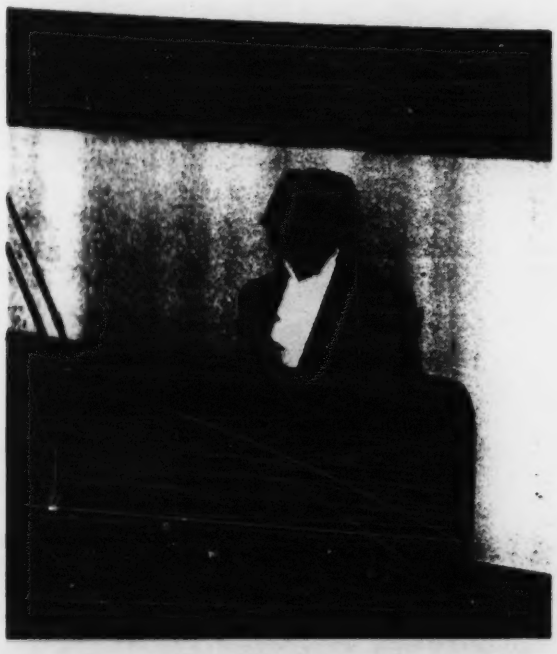
NAME: Kishimori, Jennifer M.
HOME ADDRESS: USA EDJ, APO SF 96343
SCHOOL: Zama American High School
SPONSOR/TEACHER: Mr. Lee Forrest

TITLE: Effect of Fish Fats as an Anticoagulant on Blood Clots.

It has been speculated that fish fats aid in the anticoagulation of blood. The objective of this experiment was 1) to reprove fish fats as an effective anticoagulant, and 2) to show the extent of its effectiveness.

From fifty subjects, two blood samples per individual were taken with regards to sex, age, race, and blood type, as well as temperature, date, and time. The normal clotting time of a drop of blood was compared to the clotting time of a drop of blood treated with the fish fats. The differences of the times were then taken and graphed.

After analysis, it was found that the fish fats did aid in retarding the clotting process of blood, but were ineffective on 15 percent of the individuals. Blood types "O" and "A" were contained in this percentage. The fats proved to be most effective when tested on a specific ethnic background.



ABSTRACTS OF OUTSTANDING STUDENT PAPERS OF JSHS 1986

Name: Jennifer M. Kishimori
School: Zama American High School
Teacher: James Szoka
Title: The Effect of Eicosapentaenoic Acid on Blood Coagulation Through Dietary Supplements

Previous studies by Vanderbilt University have proven fish oils as a possible blood anticoagulant which could prevent heart diseases. In a past experiment in which unpurified fish oils were 80% successful, a correlation was found between diet and racial background of tested individuals and the effectiveness of the fish oils.

This investigation attempted to prove that ingestion of concentrated amounts of fish oil retards fibrin formation in mice blood. A control blood sample was taken from four mice daily, for a four day period. The mice were fed **Thompson MaxEPA,** a concentrated form of fish oil in eicosapentaenoic acid (EPA) and docoshexaenoic acid (DHA), at 1% and .5% of their fluid body weights. The coagulation times at these EPA treatment levels were compared to control coagulation times.

It was found that the tolerance mice level of EPA was than 1% of the fluid body weight. Blood coagulation time did slow significantly with the ingestion of EPA at 1%, but unfavorable side effects were observed in the appearance and activity of the mice. The dosage at .5% FA did not have such side effects, but there was no significant slowing of blood clotting time. The 1% EPA took 3-4 days to filter out of the body system. An abnormal fibrin formation was observed to a greater extent when the mice ingested any dosage of EPA.

It was concluded ingestion of EPA slows blood coagulation only at a dosage which produces side effects in mice. EPA does affect fibrin formation, but the relationship of abnormal fibrin to clotting time is unclear.

Miss Jennifer Kishimori

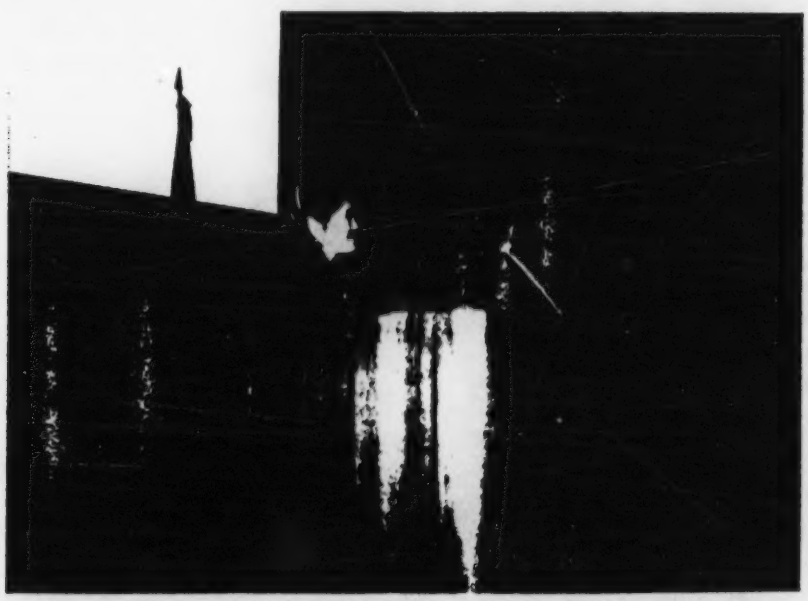
ABSTRACTS OF OUTSTANDING STUDENT PAPERS OF JSHS 1987

Name: Kay T. Shoda
School: Zama American High School
Home Address: USA FSA; APO SF 96343
Title: The Teenager's Body Image Examined Cross-culturally

A survey was conducted among Japanese and American teenagers to find out about their body image. The survey was taken and revised from the July 1985 issue of **Psychology Today.**

The survey was distributed to 100 females and 100 males of two high schools, making a total of 400 teenagers. The survey consisted of 91 questions with three different types of questions — fill in the blank, multiple choice, and essay. From the data collected, the following comparisons were made: Japanese students vs. American students, female vs. male, Japanese female vs. American female, Japanese male vs. American male as it related to specific areas of the survey.

There was a dramatic difference between the American and Japanese teenagers. Japanese teenagers were far more dissatisfied with their body parts compared to the American teenagers. There also was a dramatic difference between the female and male teenagers. The individual's involvement in activities, their sex and culture seemed to affect their body image.



Miss Kay T. Shoda

ABSTRACTS OF OUTSTANDING STUDENT PAPERS OF JSHS 1990

NAME: Wenimar Salvador & Chaviess McGillivray
HOME ADDRESS: PSC #3 Box 15515, APO San Francisco, CA 96342
SCHOOL: Wagner High School, Clark Air Base, Philippines
SPONSOR/TEACHER: Mr. Byron Wood

TITLE: The Effect of Growth Factors and Inhibitors on the Morphology E. coli

This research was conducted to determine the effects of growth factors and inhibitors on the morphology of E. coli.

Under normal conditions, E coli grows as small, gram-negative, bacillary cells. The bacteria was subjected to various growth factors, such as amino acids and glucose. In addition, the bacteria was exposed to growth inhibitors — antibiotics such as penicillin and tetracycline.

The results indicated that the metabolic processes of the E. coli are specific to the nutrients in the environment. It was found that it is possible for an introduced factor to inhibit a particular enzymatic process which synthetically produces a necessary component vital to the physiology of the bacteria.

ABSTRACTS OF OUTSTANDING STUDENT PAPERS OF JSHS 1989

NAME: Stacy Waugh
HOME ADDRESS: PFO Seattle 98768-1809 C/O Zama High School
SCHOOL: Zama High School
SPONSOR/TEACHER: Terry McGinniss

TITLE: A Comparison of Attitudes Related to Prejudice in Stateside Students and Overses Students.

Prejudice has often been a major topic in the world. Even the Supreme Court kept the Blacks down for fifty eight years by the "separate but equal" laws. In 1954 the Supreme Court in Brown vs. Board of Education declared school segregation unconstitutional. That started to change the structure of racial degradation that swept the nation. Now 35 years later many changes have come around. Blacks and other racial groups play a major part in the make up of our society. The sad fact remains that racist attitudes still exist. Prejudice however not only includes racism; it has many forms, for example, sexism. In a world dominated with white males it has been very hard to compete for equality. This study is a comparison of prejudicial attitudes of stateside students vs. prejudicial attitudes of overseas students. The hypothesis was: If stateside and overseas schools are polled on attitudes related to prejudice, then the stateside school will demonstrate more prejudice than overseas student.

One hundred questionaires were passed out to sixteen and seventeen year olds attending Newport High School and one hundred questionaires were passed out to sixteen and seventeen year olds attending Zama High School. When the data was collected the study of prejudice demonstrated that Newport students had a higher prejudice rate than Zama students. Even though the evidence is not strong it still shows that Newport students have the tendency to be more prejudice than Zama students.

NAME: Hsun Hua Chou
HOME ADDRESS: PSC #1 Box 24141, APO San Francisco, CA 96230
SCHOOL: Kadena High School
SPONSOR: Mr. D. Edwards, Kadena High School

TITLE: The Effect of Changes in the Oxygen Content of Air Inhaled into the Human Body on the Amount of Oxygen Absorbed by the Body.

The purpose of this study was to examine whether changes in the oxygen content of air inhaled into the human body affects the amount of oxygen absorbed, and if so, how.

Under normal breathing conditions, a person inhales air consisting of approximately 21% oxygen and 79% introgen, with negligible amounts of carbon dioxide. The gases exhaled by a person consists about of 17% oxygen, 79% nitrogen, and 4% carbon dioxide, depending on the age. In the experiment, the concentration of oxygen inhaled into the body was altered by having a subject breathe through a specially designed mask. Samples of the exhaled gases were taken and analyzed by gas chromatrography. Five mixtures of gases with different concentrations of oxygen were used in the experiment.

The results showed that when the oxygen concentration of the inhaled gas is increased, the amount of oxygen retained by the body also increases; when the oxygen concentration of the inhaled gas is decreased, the amount of oxygen retained by the body also decreases, indicating that the amount of oxygen absorbed by the body is a function of the oxygen content of the inhaled gas.

ABSTRACTS OF OUTSTANDING STUDENT PAPERS OF JSHS 1985

NAME:	Christopher B. Davis, Science Laureate, First Place Winner
HOME ADDRESS:	Seoul, Korea
SCHOOL:	Seoul American High School
SPONSOR/TEACHER:	Mr. Ivan Hristov
TITLE:	"Eradication of Bacteria"

This research paper was developed from research in my mother's junior year of high school. Her project determined amounts of coliform bacteria present in the Columbia and Yakima Rivers in Washington State. She treated water samples with ultraviolet light to check the feasibility of using ultraviolet light as a viable method of water treatment projects. Her research concluded that ultraviolet light was an effective method for water treatment.

The intent of this project is to extract and identify bacteria present on Korean cabbage and treat them with ultraviolet light. Treatment of cabbages with ultraviolet light is to determine if it is a viable, commercially feasible method of eradicating bacteria. Presence of E-Coli bacteria could indicate the use of human sewage as fertilizer, often called "night soil." Use of "night soil" as a fertilizer is a common practice in South Korea.

ABSTRACTS OF OUTSTANDING STUDENT PAPERS OF JSHS 1986

NAME: Rose, Randi
HOME ADDRESS: Box 70, FPO San Francisco 96651
SCHOOL: George Dewey High School
SPONSOR/TEACHER: Bob Rose

TITLE: The Effect of Simulated Acid Rain on Rice Seed Sprouting

The Philippine Islands are not heavily industrialized. However, smoke-filled air from wood fires and blackened air from automobile exhausts are common here. Despite modernization efforts, the Philippine culture is still basically agrarian and rice is the staple crop. As the fast growing population continues to burn open wood fires and use even more air polluting vehicles, the possibility of acid rain becomes real. Continued success of rice farming will become even more important.

This project was designed to investigate the effects of simulated acid rain on germination of rice seeds. One thousand rice seeds were used. Half of the seeds were exposed to the simulated acid rain, while the remainder constituted a control. Data collected were used to interpret the effects of acid rain on sprouting rice seeds.

ABSTRACTS OF OUTSTANDING STUDENT PAPERS OF JSHS 1988

NAME: Michael Weber
HOME ADDRESS: FPO Seattle 98762-0005 C/O Kinnick HS
SCHOOL: Nile C. Kinnick High School
SPONSOR/TEACHER: Ann Tarbox
TITLE: The Incorporation of Auditory Stimuli into Dream Recall

There is a world unknown to most people, a world where deams reside, dreams of hidden causes. The intent of this study was to investigate and explore this world of dreams and their causes. The experiment was constructed to examine one hypothesis derived from this broad topic. The hypothesis was as follows: If a sleeping subject is exposed to an external sound stimulus, then the sound will not be incorporated in the dream recall.

To test this hypothesis, human male subjects of the ages of 16-17 were each attached to an EEG and allowed to sleep. The EEG was used to monitor the sleep stages and identify the REM periods, the sleep stage of most dreaming. When the subject was in REM sleep, sound stimuli was played from a recording; the subject was awakened 30 seconds later. The dream recall was collected and the extent and content of the dream recall was then analyzed. This data was then compared to that of a control in which the auditory stimuli was not used. The result gave support to a rejection of the null hypothesis, which suggests that auditory stimuli are incorporated in dream recall.

NAME: Jan Richards Durham
HOME ADDRESS: FPO Seattle 98773-0005 C/O Kubasaki HS
SCHOOL: Kubasaki High School
SPONSOR/TEACHER: Jane Larson
TITLE: Effects of Ritalin on the Growth of Mice

The drug Ritalin is prescribed to children who have an attention span deficit or are suffering from hyperactivity (hyperkinesis). The drug enables the child to settle down and concentrate on the task at hand. There are side effects however. Among them is the suspicion of retardation of growth and weight. The idea for this experiment came from the mother of a child who is on ritalin now. She said that she noticed a lack of growth in the child, in correlation with taking the drug.

Ten sibling mice were used as the subjects because of a need for youth and equality in age. After they were weaned they were separated into two groups of five. The ritalin was diluted down in a water solution and administered in proportion to their body weight. Each animal in the experimental group received a daily dosage of 1ml before its feeding. Then both groups were weighed and the data averaged out. The experiment was designed to show a difference in weight to indicate if the drug was having any effect. It was found that there was an 11 percent difference in weight gain, the control group increasing in weight by 41.9%, and the experimental by 30.7%.

NAME: Amanda Danford
HOME ADDRESS: APO San Francisco 96343-0005 C/O Zama High School
SCHOOL: Zama High School
SPONSOR/TEACER: Lee Forrest
TITLE: The Perfect Formula

Perfect numbers have often intrigued people, yet a method by which to find them has been elusive. The purpose of my investigation was to find a formula for finding perfect numbers. The formula was discovered by manipulation of known perfect numbers. A pattern involving powers of two emerged. This pattern, as well as a direct proof and an indirect proof were used in the development of the formula $2^x(2^{x+1}-1)$, and its proof.

ABSTRACTS OF OUTSTANDING STUDENT PAPERS OF JSHS 1990

NAME: Anthony K. Olmsted
ADDRESS: USA EDFE Box #72 APO SF 96301-0427
SCHOOL: Seoul American High School
SPONSOR: Elizabeth Chan
TITLE: An Analysis of the Growth and Development of Mice Fed High-Protein Earthworm Meal

Earthworms are high in protein and provide fine nourishment for both animals and humans. The idea for this experiment came from a book on future protein sources. It says that earthworms are beneficial to animals and could be an alternate human food source.

Three tests using different age groups of mice as the subjects were conducted in order to prove the hypothesis that mice will grow larger and learn faster after having eaten earthworms. In a 3-week test, each animal was weighed alternate days and received 5 grams of food daily. In the last two tests, the mice ran through two mazes, one simple and one complex to establish time averages in testing the mice's learning abilities. The experiments were designed to show a difference in weight and maze times to prove that the worms are beneficial to mice. The control group increased in weight by 53% with an average maze time of 82.49 seconds, while the experimental group increased in weight by 75% with a maze time of 62.16 seconds.

ABSTRACTS OF OUTSTANDING STUDENT PAPERS OF JSHS 1990

NAME: Julie Spencer
HOME ADDRESS: APO San Francisco CA 96239 C/O Kadena High School
SCHOOL: Kadena High School
SPONSOR/TEACHER: Mr. Dennis Edwards

TITLE: A Study of Blood Group Lectins as Found in Indigenous Okinawan Substances

The ABO blood system is composed of sugar structures on the membrances of human red blood cells. This system imparts the red blood cell antigenicity. Reactivity of human blood is often determined by cross-mixing of human blood, but sometimes other methods of determining subgroup specificity are required.

Lectins are proteins which recognize sugar structures on red cell membrances. They were originally isolated from plants and were found in large quantities in many seeds. Lectins are used as relatively inexpensive, easily stored, and low-risk substitutes for human red cells in determining specificity of blood.

The purpose of this research was to identify lectins in substances indigenous to Okinawa. Extractions were made from twenty-two substances. Nine of these twenty-two extractions proved to have agglutin properties, and two were specific. These two lectins, large lima beans and Echinometra mathaei type B sea urchin, reacted with selective cells and were found to have anti-A and anti-H specificity, respectively. In the future, Echinometra matheai type B lectin may also be used for subspecies identification.

NAME: Haruka Itakura
HOME ADDRESS: 2-7 Hanazawa-cho, Kugenuma, Fujisawa-shi, Kanagawa-ken, Japan
SCHOOL: Zama American High School, Camp Zama, Japan
SPONSOR/TEACHER: Lee Forrest
TITLE: The Effects of a Detergent Containing a Non-ionic Surfactant — Polyloxyethylene Alkyl Phenyl Ether on Killifish.

A detergent containing a non-ionic surfactant — polyoxyethylene alkyl phenyl ether, currently sold on the Japanese market, claims to be harmless to humans. The object of this investigation was to determine if the detergent is, in fact, harmless. The validity of the claim was to be inferred from the effects it had on killifish.

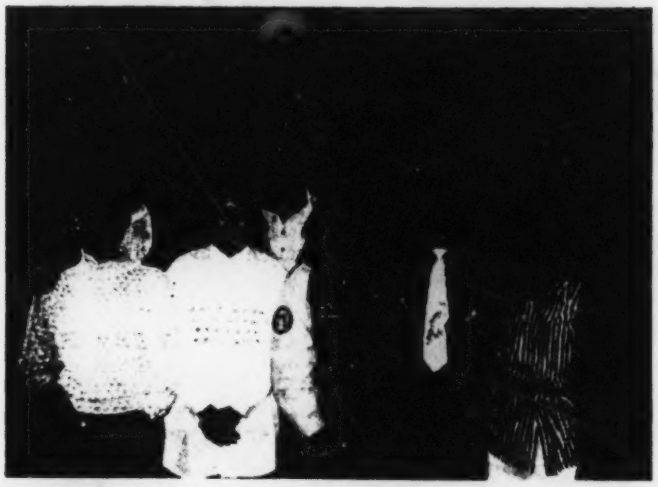
The experiment consisted of observing the effects of a solution of non-ionic surfactant on killifish at different concentration levels and comparing those effects with the effects of soap and detergent.

Results were that, at the two lowest levels, 30% of the fish died in the 4 ppm concentration solution and 50% in the 5 ppm concentration (37 hours LC = 500,000). No fish died in the soap and in the detergent solutions at higher concentration levels. The control group (0 ppm) remained unchanged and healthy.

It was concluded that the solution was lethal to killifish, the minimum lethal concentration level being 5 ppm, and that detergents such as this should be recognized for their potentially harmful effects on humans and the ecological environment.

NAME: William E. Wagner
HOME ADDRESS: PO Box 1863 Camp Foster
SCHOOL: Kubasaki High School
SPONSOR/TEACHER: Jane Larson
TITLE: The Effect of Visual Stimulation on a Bicycler's Performance.

This research attempted to determine whether video stimulation can cause an increase in a rider's speed on an exercise bike. Two tests were performed, one without the visual stimulation and one with the visual stimulation. A video tape of two minutes duration was prepared by filming progress on a road by a rider in a car. Speed varied from twenty kph during the first minute to forty kph the second minute. Subjects performed two tests by pedaling an exercise bike, first with no visual stimulation, and then watching the video in front of the bicycle. The speedometer reading was recorded every fifteen seconds. It was found that subjects pedaled at a steady pace without the visual stimulation. The subjects slightly changed their speed according to ideomotor responses to the video. The t-test showed no significant difference in speeds attained with and without watching the video.



From L to R
Haruka Itakura, Mr. Anthony Ferrante, Stacy Waugh, Mr. Dennis Edwards, Hsun Hua Chou, William Wagner and Mrs. Jane Larson.

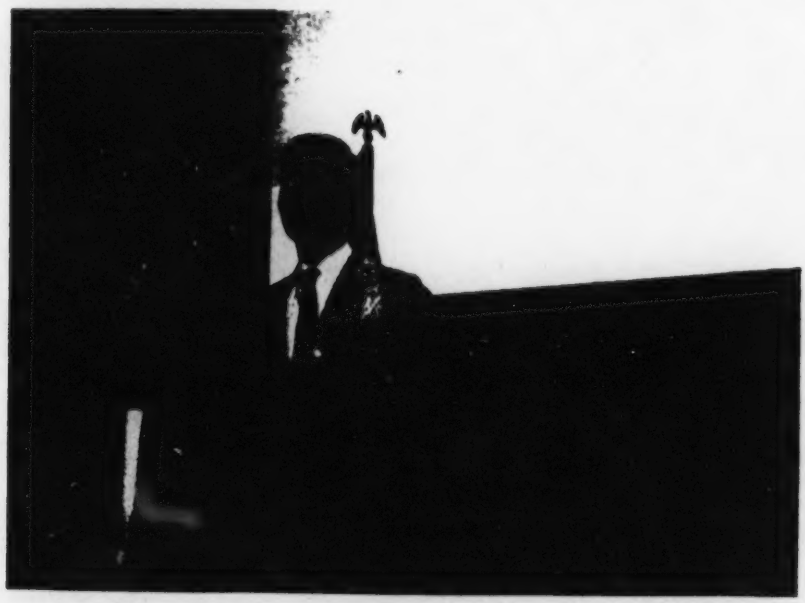
ABSTRACTS OF OUTSTANDING STUDENT PAPERS OF JSHS 1987

David Beach
School: Zama American High School
Home Address: HQ USARJ G5, APO S.F. 96343
Title: The Effect of Visible and Ultraviolet Light on Growing Mongo Plants

The objective of this experiment was to see whether growing seedlings under visible light or a combination of ultraviolet and visible light would cause them to grow less than they would under simulated sunlight (visible, infrared, and ultraviolet light), and if so, by what amount.

This has practical applications since growth of food in artificial environments is likely to increase in the future. If this does indeed occur, the ideal environment for a specific plant, and for plants in general, will be of a great deal of interest. The aspect of lighting is a fairly easy but important area of artificial environments to study and modify, and the results are fairly easy to record and evaluate.

One hundred forty-four sprouted mongo beans were installed in six fishtanks, with twenty-four plants per tank, arranged in three rows of eight. All tanks had the same amount and type of soil, received the same amount of water and fertilizer, and received the same amount of heat and visible light. Two tanks had simulated sunlight. The lighting period consisted of exactly 12 hours a day of light for each tank, and sprout heights were recorded at the start of each period of light. The results proved that plants grow significantly better with infrared and ultraviolet light present than without, and showed that, at least for mongo plants, infrared light is more important than ultraviolet light in stimulating plant growth.



Mr. David Beach

ABSTRACTS OF OUTSTANDING STUDENT PAPERS AT JSHS 1985

NAME:	Gary A. Cecchine III, Second Place Winner
HOME ADDRESS:	HQ 19th SupCom, ATTN: EANC-IG, APO San Francisco 96212
SCHOOL:	Taegu American School
SPONSOR/TEACHER:	Mr. Edgar Mason
TITLE:	"The Effects of Dexamethasone and Related Steroids on the Learning Abilities of Male White Mice"

Although a great variety of synthetic steroids is utilized in clinical procedures today, their effect on the learning abilities of animals is yet to be completely understood. The objective of this project is to determine if dexamethasone, a typical representative of all synthetic glucocorticoids, has any effect on the learning capacity and ability of a simple mammal, the white mouse.

Ten mice were divided into two equal groups. Each mouse in the experiment group is injected with a constant and equal amount of dexamethasone regularly. Daily, each mouse is placed in an isolated cage with a light at one end. When the mouse touches the light, he is rewarded promptly. A change in the amount of time that the mouse requires to touch the light once he is placed in the cage indicates that learning has taken place.

Analysis of the data to this time indicates that no major deviation of learning abilities is present between the dexamethasone-subjected mice and the norm. However, it is not possible at this time to conclude upon the long-term effects of the glococorticoid.

ABSTRACTS OF OUTSTANDING STUDENT PAPERS OF JSHS 1985

NAME: Emiko Kanayama, Third Place Winner
HOME ADDRESS: Sagamihara-shi, Higashi Onuma 2-14-4, Kanagawa
SCHOOL: Zama High School
SPONSOR/TEACHER: Mr. James Szoka

TITLE: "Muscle Sounds"

The muscles of the human body generate sound as they continually contract and relax. Muscle sounds are normally inaudible because the human ear is insensitive to low frequency sound. The object of this project was to compare muscle sounds among individuals with different muscle masses when force was exerted.

Three males and three females with different upper arm muscle masses but having approximately the same amount of skinfold fat did curls with a 3 kg. weight until they felt their biceps muscle strain. The muscle sounds of the strained muscles of each individual were measured by a fetal stethoscope attached to an oscilloscope.

After analysis, it was concluded that the sound produced by the contracted muscle was higher in voltage than the sound produced by the relaxed muscle. Also those individuals with larger upper arm muscle masses produced even higher voltage muscle sounds than those individuals with small upper arm muscle masses.

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TSUKUBA IBARAKI PREFECTURE, JAPAN

NAME: John Tucker
HOME ADDRESS: Box 70-K San Francisco 96651
SCHOOL: George Dewey High School, Subic N.B. Philippines
SPONSOR/TEACHER: Ms. Ruth Hopkins
TITLE: Relative Effect of Surface Oil on Wave Heigh And Period in a Wave Tank

The objective of this research was to find the relative effect of three very small concentrations of surface oil on paddle period and height. The procedure used a variable frequency wave generator in a wave tank and a computer which monitored the wave period, paddle period and wave height. The researcher compared the wave period and heights between the control group and three groups identified by differing concentrations of surface oil for three different paddle priods. The rearcher found that adding surface oil tended to increase frequency and height of the wave. The initial addition of surface oil tended to increase the wave frequency, but additional increase in surface oil tended to decrease frequency. The addition of increasing amounts of surface oil tended to increase the wave height.

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TSUKUBA IBARAKI PREFECTURE, JAPAN

NAME: Ted A. Manning
HOME ADDRESS: PSC Box 6439, APO San Francisco 96519
SCHOOL: Robert D. Edgren High School
SPONSOR/TEACHER: Mr. Robert E. Manning
TITLE: A Computer Program to Aid the Learning of Japanese Katakana

Although the Japanses language is not consisered to be a difficult language to learn to speak, it is very difficult to learn to write. This project involved the writing of a Computer Aided Instruction program (CAI), to help a Japanese I class learn Katakana. Katakana is an alphabet of symbols which represent phonetic syllables.

In the teaching of Katakana, the teacher shows the student how to write each symbol, how to pronounce it, and how to use it. Individual practice with the symbols is essential for learning, but the teacher cannot teach all of the students individually. Furthermore, students are rarely motivated enough to study on their own.

A computer program as a teaching aid can be used individually by students. A work adventure was written for this purpose because a game creates higher motivation than a drill type of CAI. Playing the adventure requires reading, and since part of the text is displayed in Katakana, the player receives paractice in reading these symbols as he progresses through the game. The program was written on an Exidy Sorcerer personal computer in the BASIC language. It was designed to include most of the Katakana symbols t ensure complete practice. To test the effectiveness of the program, an experiment will be implemented using a Japanese I class.

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TSUKUBA IBARAKI PREFECTURE, JAPAN

NAME: Christopher C. Zeitvogel
HOME ADDRESS: PSC #1, Box 28076 APO San Francisco 96230
SCHOOL: Kadena High School
SPONSOR/TEACHER:
TITLE: Effects of Pesticides on the Growth of Okinawan Soil Bacteria

This project's objective was to determine at which levels insecticides which are applied to or leached into the soil begin to affect bacteria living within the soil. Samples of baygon, chlorodane, lindane, and malathion were obtained, along with data indicating use and application strength. Ten different concentrations of each insecticide were tested, as well as the insecticide at full strength. Baygon was found to allow bacterial growth at a concentration half of its application strength. Chlorodane did not allow growth at any of the levels tested, including application strength. Lindane allowed growth at .009%. Malathion allowed growth at one-fifteenth of it's application strength.

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TSUKUBA IBARAKI PREFECTURE, JAPAN

NAME: Keener, Erin
HOME ADDRESS: Scientific Evaluation Team APO San Francisco 96343
SCHOOL: Zama American High School
SPONSOR/TEACHER:
TITLE: The Effects of Copper, Iron, and Lead as Pollutants on the Silkworm, Bombyx Mori - A Preliminary Study.

The research objective was to determine the effects of heavy metal pollution, a modern day threat to the sericulture industry, on the silkworm, Bombyz mori, using copper, iron, and lead as test variables. Prior to experimentation, approximatley 700 silkworms were observed for four months. Careful observations and developed procedures were logged daily. Artificial hatching was executed using the egg dipping procedure. Commercial sericulture techniques were surveyed at the Atsugi Silkwarm Center. The experiment was conducted as follows. Solutions of known concentrations were made, one solution per metal, and different volumes of the solutions were added to artificial food to produce concentrations ranging from 1 pt/10 - 1pt/100,000. Two trials were conducted, A and B. Trial A was unreliable because of the measuring unit involved and because of uncontrollable genetic variation among the worms. Therefore, Trial B was conducted under more controlled conditions. The mass of the worms, droppings, leftover food, and fresh food were calculated and recorded every other day. There was no pattern in the resulting disorders corresponding to group, metal or concentration. The control group was the healthiest in both trials, and lead was the least toxic of the three metals.

1982 PACIFIC REGION JSHS

TSUKUBA IBARAKI PREFECTURE, JAPAN

NAME: Sutton Michael S.
HOME ADDRESS: PSC Box 5779, APO San Francisco CA 96519
SCHOOL: Robert D. Edgren High School
SPONSOR/TEACHER: Mr. Robert Manning/Dr. Charles Solberg
TITLE: An Investigation to Determine if There is A Correlation Between Long-Distance Running and Academic Achievement

The objective of this research was to determine if there is a correlation between long-distance running and academic achievement in high school. The procedure was to use grade point averages of cross-country runners and non-team students. By comparing the grade point averages of the runners and the grade point averages of the non-team students, it was found that the runners as a group, had the higher grade point average. Dr. Kenneth Cooper's classification for the 1.5 miles aerobic test were used as a basis for ratings cross-country runners into fast and slow categories. By comparing the fast runners' grade point averages to the slow runners' grade point averages, it was found that the group average was higher for the fast category. If evidence of a significant positive correlation between long-distance running and academic achievement is shown through further analysis, the research will be expanded to try to determine the reason this correlation exists.

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TSUKUBA IBARAKI PREFECTURE, JAPAN

Name: Ngo, J. Thomas
HOME ADDRESS: PSC #3, Box 15658, APO, San Francisco 96432
SCHOOL: Wagner High School
SPONSOR/TEACHER: Mr. Garold Means
TITLE: Computer Simulation of Lunar Capture

Three major theories are now used to explain the origin of the moon. One of these is the theory that the moon accreted separately from the earth, and became its satelite by being captured in the earth's gravitational force field. A computer simulation was used to derermine how feasible such a capture would be. None of the trials showed a successful capture because the earth attracted the moon prior to the calculated rendezvous, causing it to pass very close to the earth and accelerate in an unplanned way. The researcher lacked the mathematics required to preform such predictions; research halted.

APPENDIX H

LIST OF VIDEO TAPES TO HELP STUDENTS PREPARE

AVAILABLE VIDEO TAPES

Several video tapes are available to help student prepare for the Symposium and to help them with their research. They are listed below:

1. "The Scientific Method" This is a detailed discussion of the scientific method and the research process by Dr. Howard Liljestrand of the University of Texas at Austin.

2. "Student Presentations" - Usually several tapes are available under this title. These tapes cover the actual formal presentations made by students at the Symposium the previous year.

3. "Field Trips" These tapes cover the field trips taken be symposium students the previous year.

4. "Guest Speaker" This the keynote speakers address from the previous year.

5. "Japanese - American Cultural Interchange" This tape covers the Japanese-American party usually held on Wednesday evening of the Symposium week.

6. "Poster Sessions" These tapes cover the informal presentations made the previous year by participants of the poster sessions.

7. "Banquet" This tape covers the Symposium opening night banquet.

The tapes may be borrowed from the District Superintendent of Schools for Japan or JSHS coordinators may obtain a copy of any or all of the tapes. To either obtain your own copy of one or more tapes or borrow the tapes, contact Takashi Suyama at AUTOVON 225-3940/3941/3946/3947. To obtain copies of the tapes for your school, you must provide Mr. Suyama with blank tapes.

ABSTRACTS OF OUTSTANDING STUDENT PAPERS OF JSHS 1987

NAME: Rhoades, Shannon
HOME ADDRESS: Box 374, FPO Seattle, WA 98767-1299
SCHOOL: Zama American High School
SPONSOR/TEACHER: Mr. Lee Forrest, Mr. Darwin Scales

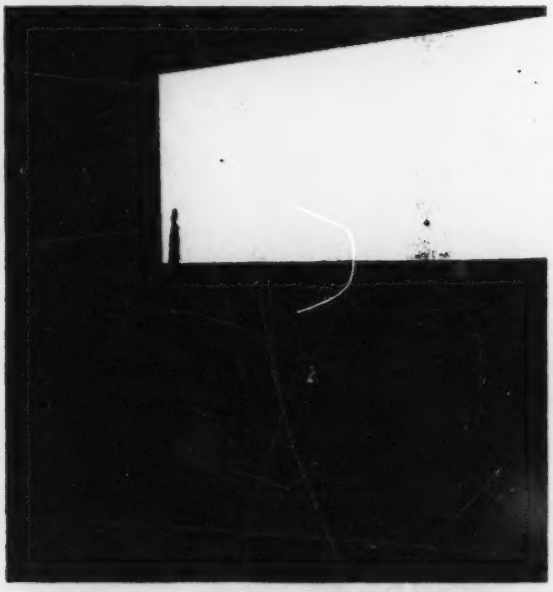
TITLE: "Interaction Among Ethnic Groups in DoDDS High Schools".

This survey assessed the levels of cultural diversity and prejudice in DoDDS high schools, particularly Zama High School.

A 33 question survey pertaining to interaction among different ethnic groups was distributed to the student body, and were then statistically compiled with respect to sex and ethnic backgrounds.

The students represented a diversity of backgrounds and exhibited varying levels of tolerance and prejudice. To determine the progress of tolerance between generations, students' attitudes were compared to how they perceived their parent's attitudes.

It was observed that the majority of students felt the atmosphere in DoDDS is conducive for racial equality and acceptance. The majority felt less prejudiced than their parents. They also expressed that though the U.S. is more prejudiced than other countries, there is less than when their parents were young. Students were perceived to accept ethnic minorities in positions of authority and have pride in their backgrounds. A major discovery suggests the possibility of racial and cultural harmony.



ABSTRACTS OF OUTSTANDING STUDENT PAPERS OF JSHS 1986

NAME: Kishimori, Jennifer M.
HOME ADDRESS: USA EDJ, APO SF 96343
SCHOOL: Zama American High School
SPONSOR/TEACHER: Mr. Lee Forrest

TITLE: Effect of Fish Fats as an Anticoagulant on Blood Clots.

It has been speculated that fish fats aid in the anticoagulation of blood. The objective of this experiment was 1) to reprove fish fats as an effective anticoagulant, and 2) to show the extent of its effectiveness.

From fifty subjects, two blood samples per individual were taken with regards to sex, age, race, and blood type, as well as temperature, date, and time. The normal clotting time of a drop of blood was compared to the clotting time of a drop of blood treated with the fish fats. The differences of the times were then taken and graphed.

After analysis, it was found that the fish fats did aid in retarding the clotting process of blood, but were ineffective on 15 percent of the individuals. Blood types "O" and "A" were contained in this percentage. The fats proved to be most effective when tested on a specific ethnic background.

ABSTRACTS OF OUTSTANDING STUDENT PAPERS OF JSHS 1986

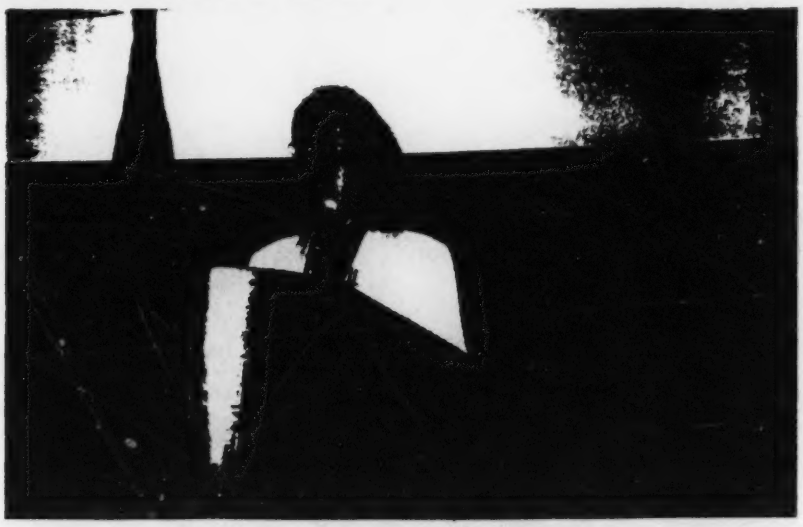
Name: Jennifer M. Kishimori
School: Zama American High School
Teacher: James Szoka
Title: The Effect of Eicosapentaenoic Acid on Blood Coagulation Through Dietary Supplements

Previous studies by Vanderbilt University have proven fish oils as a possible blood anticoagulant which could prevent heart diseases. In a past experiment in which unpurified fish oils were 80% successful, a correlation was found between diet and racial background of tested individuals and the effectiveness of the fish oils.

This investigation attempted to prove that ingestion of concentrated amounts of fish oil retards fibrin formation in mice blood. A control blood sample was taken from four mice daily, for a four day period. The mice were fed Thompson MaxEPA, a concentrated form of fish oil in eicosapentaenoic acid (EPA) and docoshexaenoic acid (DHA), at 1% and .5% of their fluid body weights. The coagulation times at these EPA treatment levels were compared to control coagulation times.

It was found that the tolerance mice level of EPA was than 1% of the fluid body weight. Blood coagulation time did slow significantly with the ingestion of EPA at 1%, but unfavorable side effects were observed in the appearance and activity of the mice. The dosage at .5% FA did not have such side effects, but there was no significant slowing of blood clotting time. The 1% EPA took 3-4 days to filter out of the body system. An abnormal fibrin formation was observed to a greater extent when the mice ingested any dosage of EPA.

It was concluded ingestion of EPA slows blood coagulation only at a dosage which produces side effects in mice. EPA does affect fibrin formation, but the relationship of abnormal fibrin to clotting time is unclear.



Miss Jennifer Kishimori

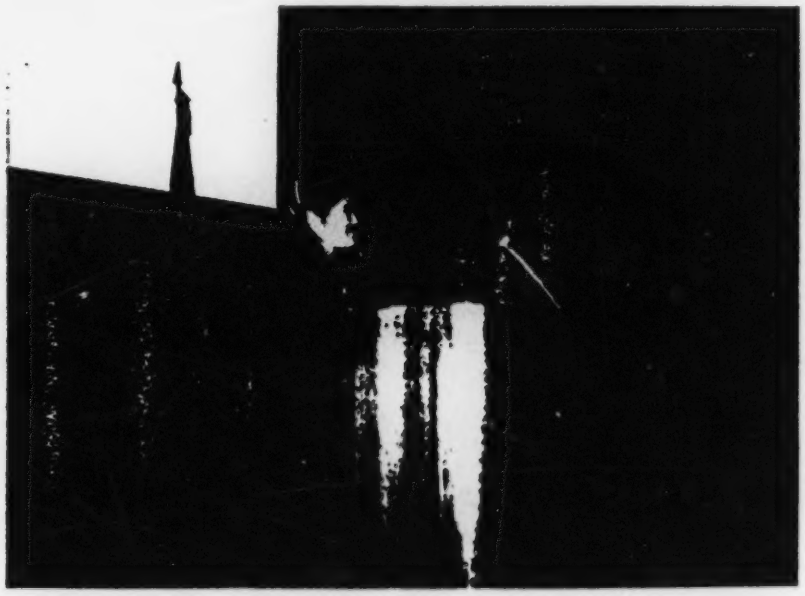
ABSTRACTS OF OUTSTANDING STUDENT PAPERS OF JSHS 1987

Name: Kay T. Shoda
School: Zama American High School
Home Address: USA FSA; APO SF 96343
Title: The Teenager's Body Image Examined Cross-culturally

A survey was conducted among Japanese and American teenagers to find out about their body image. The survey was taken and revised from the July 1985 issue of Psychology Today.

The survey was distributed to 100 females and 100 males of two high schools, making a total of 400 teenagers. The survey consisted of 91 questions with three different types of questions — fill in the blank, multiple choice, and essay. From the data collected, the following comparisons were made: Japanese students vs. American students, female vs. male, Japanese female vs. American female, Japanese male vs. American male as it related to specific areas of the survey.

There was a dramatic difference between the American and Japanese teenagers. Japanese teenagers were far more dissatisfied with their body parts compared to the American teenagers. There also was a dramatic difference between the female and male teenagers. The individual's involvement in activities, their sex and culture seemed to affect their body image.



Miss Kay T. Shoda

ABSTRACTS OF OUTSTANDING STUDENT PAPERS OF JSHS 1990

NAME: Wenimar Salvador & Chaviess McGillivray
HOME ADDRESS: PSC #3 Box 15515, APO San Francisco, CA 96342
SCHOOL: Wagner High School, Clark Air Base, Philippines
SPONSOR/TEACHER: Mr. Byron Wood

TITLE: The Effect of Growth Factors and Inhibitors on the Morphology E. coli

This research was conducted to determine the effects of growth factors and inhibitors on the morphology of E. coli.

Under normal conditions, E coli grows as small, gram-negative, bacillary cells. The bacteria was subjected to various growth factors, such as amino acids and glucose. In addition, the bacteria was exposed to growth inhibitors — antibiotics such as penicillin and tetracycline.

The results indicated that the metabolic processes of the E. coli are specific to the nutrients in the environment. It was found that it is possible for an introduced factor to inhibit a particular enzymatic process which synthetically produces a necessary component vital to the physiology of the bacteria.

ABSTRACTS OF OUTSTANDING STUDENT PAPERS OF JSHS 1989

NAME: Stacy Waugh
HOME ADDRESS: PFO Seattle 98768-1809 C/O Zama High School
SCHOOL: Zama High School
SPONSOR/TEACHER: Terry McGinniss
TITLE: A Comparison of Attitudes Related to Prejudice in Stateside Students and Overses Students.

Prejudice has often been a major topic in the world. Even the Supreme Court kept the Blacks down for fifty eight years by the "separate but equal" laws. In 1954 the Supreme Court in Brown vs. Board of Education declared school segregation unconstitutional. That started to change the structure of racial degradation that swept the nation. Now 35 years later many changes have come around. Blacks and other racial groups play a major part in the make up of our society. The sad fact remains that racist attitudes still exist. Prejudice however not only includes racism; it has many forms, for example, sexism. In a world dominated with white males it has been very hard to compete for equality. This study is a comparison of prejudicial attitudes of stateside students vs. prejudicial attitudes of overseas students. The hypothesis was: If stateside and overseas schools are polled on attitudes related to prejudice, then the stateside school will demonstrate more prejudice than overseas student.

One hundred questionaires were passed out to sixteen and seventeen year olds attending Newport High School and one hundred questionaires were passed out to sixteen and seventeen year olds attending Zama High School. When the data was collected the study of prejudice demonstrated that Newport students had a higher prejudice rate than Zama students. Even though the evidence is not strong it still shows that Newport students have the tendency to be more prejudice than Zama students.

NAME: Hsun Hua Chou
HOME ADDRESS: PSC #1 Box 24141, APO San Francisco, CA 96230
SCHOOL: Kadena High School
SPONSOR: Mr. D. Edwards, Kadena High School
TITLE: The Effect of Changes in the Oxygen Content of Air Inhaled into the Human Body on the Amount of Oxygen Absorbed by the Body.

The purpose of this study was to examine whether changes in the oxygen content of air inhaled into the human body affects the amount of oxygen absorbed, and if so, how.

Under normal breathing conditions, a person inhales air consisting of approximately 21% oxygen and 79% introgen, with negligible amounts of carbon dioxide. The gases exhaled by a person consists about of 17% oxygen, 79% nitrogen, and 4% carbon dioxide, depending on the age. In the experiment, the concentration of oxygen inhaled into the body was altered by having a subject breathe through a specially designed mask. Samples of the exhaled gases were taken and analyzed by gas chromatrography. Five mixtures of gases with different concentrations of oxygen were used in the experiment.

The results showed that when the oxygen concentration of the inhaled gas is increased, the amount of oxygen retained by the body also increases; when the oxygen concentration of the inhaled gas is decreased, the amount of oxygen retained by the body also decreases, indicating that the amount of oxygen absorbed by the body is a function of the oxygen content of the inhaled gas.

ABSTRACTS OF OUTSTANDING STUDENT PAPERS OF JSHS 1985

NAME:	Christopher B. Davis, Science Laureate, First Place Winner
HOME ADDRESS:	Seoul, Korea
SCHOOL:	Seoul American High School
SPONSOR/TEACHER:	Mr. Ivan Hristov
TITLE:	"Eradication of Bacteria"

This research paper was developed from research in my mother's junior year of high school. Her project determined amounts of coliform bacteria present in the Columbia and Yakima Rivers in Washington State. She treated water samples with ultraviolet light to check the feasibility of using ultraviolet light as a viable method of water treatment projects. Her research concluded that ultraviolet light was an effective method for water treatment.

The intent of this project is to extract and identify bacteria present on Korean cabbage and treat them with ultraviolet light. Treatment of cabbages with ultraviolet light is to determine if it is a viable, commercially feasible method of eradicating bacteria. Presence of E-Coli bacteria could indicate the use of human sewage as fertilizer, often called "night soil." Use of "night soil" as a fertilizer is a common practice in South Korea.

ABSTRACTS OF OUTSTANDING STUDENT PAPERS OF JSHS 1986

NAME: Rose, Randi
HOME ADDRESS: Box 70, FPO San Francisco 96651
SCHOOL: George Dewey High School
SPONSOR/TEACHER: Bob Rose

TITLE: The Effect of Simulated Acid Rain on Rice Seed Sprouting

The Philippine Islands are not heavily industrialized. However, smoke-filled air from wood fires and blackened air from automobile exhausts are common here. Despite modernization efforts, the Philippine culture is still basically agrarian and rice is the staple crop. As the fast growing population continues to burn open wood fires and use even more air polluting vehicles, the possibility of acid rain becomes real. Continued success of rice farming will become even more important.

This project was designed to investigate the effects of simulated acid rain on germination of rice seeds. One thousand rice seeds were used. Half of the seeds were exposed to the simulated acid rain, while the remainder constituted a control. Data collected were used to interpret the effects of acid rain on sprouting rice seeds.

ABSTRACTS OF OUTSTANDING STUDENT PAPERS OF JSHS 1990

NAME: Anthony K. Olmsted
ADDRESS: USA EDFE Box #72 APO SF 96301-0427
SCHOOL: Seoul American High School
SPONSOR: Elizabeth Chan
TITLE: An Analysis of the Growth and Development of Mice Fed High-Protein Earthworm Meal

Earthworms are high in protein and provide fine nourishment for both animals and humans. The idea for this experiment came from a book on future protein sources. It says that earthworms are beneficial to animals and could be an alternate human food source.

Three tests using different age groups of mice as the subjects were conducted in order to prove the hypothesis that mice will grow larger and learn faster after having eaten earthworms. In a 3-week test, each animal was weighed alternate days and received 5 grams of food daily. In the last two tests, the mice ran through two mazes, one simple and one complex to establish time averages in testing the mice's learning abilities. The experiments were designed to show a difference in weight and maze times to prove that the worms are beneficial to mice. The control group increased in weight by 53% with an average maze time of 82.49 seconds, while the experimental group increased in weight by 75% with a maze time of 62.16 seconds.

ABSTRACTS OF OUTSTANDING STUDENT PAPERS OF JSHS 1990

NAME: Julie Spencer
HOME ADDRESS: APO San Francisco CA 96239 C/O Kadena High School
SCHOOL: Kadena High School
SPONSOR/TEACHER: Mr. Dennis Edwards

TITLE: A Study of Blood Group Lectins as Found in Indigenous Okinawan Substances

The ABO blood system is composed of sugar structures on the membrances of human red blood cells. This system imparts the red blood cell antigenicity. Reactivity of human blood is often determined by cross-mixing of human blood, but sometimes other methods of determining subgroup specificity are required.

Lectins are proteins which recognize sugar structures on red cell membrances. They were originally isolated from plants and were found in large quantities in many seeds. Lectins are used as relatively inexpensive, easily stored, and low-risk substitutes for human red cells in determining specificity of blood.

The purpose of this research was to identify lectins in substances indigenous to Okinawa. Extractions were made from twenty-two substances. Nine of these twenty-two extractions proved to have agglutin properties, and two were specific. These two lectins, large lima beans and Echinometra mathaei type B sea urchin, reacted with selective cells and were found to have anti-A and anti-H specificity, respectively. In the future, Echinometra matheai type B lectin may also be used for subspecies identification.

ABSTRACTS OF OUTSTANDING STUDENT PAPERS OF JSHS 1988

NAME: Michael Weber
HOME ADDRESS: FPO Seattle 98762-0005 C/O Kinnick HS
SCHOOL: Nile C. Kinnick High School
SPONSOR/TEACHER: Ann Tarbox
TITLE: The Incorporation of Auditory Stimuli into Dream Recall

There is a world unknown to most people, a world where deams reside, dreams of hidden causes. The intent of this study was to investigate and explore this world of dreams and their causes. The experiment was constructed to examine one hypothesis derived from this broad topic. The hypothesis was as follows: If a sleeping subject is exposed to an external sound stimulus, then the sound will not be incorporated in the dream recall.

To test this hypothesis, human male subjects of the ages of 16-17 were each attached to an EEG and allowed to sleep. The EEG was used to monitor the sleep stages and identify the REM periods, the sleep stage of most dreaming. When the subject was in REM sleep, sound stimuli was played from a recording; the subject was awakened 30 seconds later. The dream recall was collected and the extent and content of the dream recall was then analyzed. This data was then compared to that of a control in which the auditory stimuli was not used. The result gave support to a rejection of the null hypothesis, which suggests that auditory stimuli are incorporated in dream recall.

NAME: Jan Richards Durham
HOME ADDRESS: FPO Seattle 98773-0005 C/O Kubasaki HS
SCHOOL: Kubasaki High School
SPONSOR/TEACHER: Jane Larson
TITLE: Effects of Ritalin on the Growth of Mice

The drug Ritalin is prescribed to children who have an attention span deficit or are suffering from hyperactivity (hyperkinesis). The drug enables the child to settle down and concentrate on the task at hand. There are side effects however. Among them is the suspicion of retardation of growth and weight. The idea for this experiment came from the mother of a child who is on ritalin now. She said that she noticed a lack of growth in the child, in correlation with taking the drug.

Ten sibling mice were used as the subjects because of a need for youth and equality in age. After they were weaned they were separated into two groups of five. The ritalin was diluted down in a water solution and administered in proportion to their body weight. Each animal in the experimental group received a daily dosage of 1ml before its feeding. Then both groups were weighed and the data averaged out. The experiment was designed to show a difference in weight to indicate if the drug was having any effect. It was found that there was an 11 percent difference in weight gain, the control group increasing in weight by 41.9%, and the experimental by 30.7%.

NAME: Amanda Danford
HOME ADDRESS: APO San Francisco 96343-0005 C/O Zama High School
SCHOOL: Zama High School
SPONSOR/TEACER: Lee Forrest
TITLE: The Perfect Formula

Perfect numbers have often intrigued people, yet a method by which to find them has been elusive. The purpose of my investigation was to find a formula for finding perfect numbers. The formula was discovered by manipulation of known perfect numbers. A pattern involving powers of two emerged. This pattern, as well as a direct proof and an indirect proof were used in the development of the formula $2^x(2^{x+1}-1)$, and its proof.

ABSTRACTS OF OUTSTANDING STUDENT PAPERS OF JSHS 1987

David Beach
School: Zama American High School
Home Address: HQ USARJ G5, APO S.F. 96343
Title: The Effect of Visible and Ultraviolet Light on Growing Mongo Plants

The objective of this experiment was to see whether growing seedlings under visible light or a combination of ultraviolet and visible light would cause them to grow less than they would under simulated sunlight (visible, infrared, and ultraviolet light), and if so, by what amount.

This has practical applications since growth of food in artificial environments is likely to increase in the future. If this does indeed occur, the ideal environment for a specific plant, and for plants in general, will be of a great deal of interest. The aspect of lighting is a fairly easy but important area of artificial environments to study and modify, and the results are fairly easy to record and evaluate.

One hundred forty-four sprouted mongo beans were installed in six fishtanks, with twenty-four plants per tank, arranged in three rows of eight. All tanks had the same amount and type of soil, received the same amount of water and fertilizer, and received the same amount of heat and visible light. Two tanks had simulated sunlight. The lighting period consisted of exactly 12 hours a day of light for each tank, and sprout heights were recorded at the start of each period of light. The results proved that plants grow significantly better with infrared and ultraviolet light present than without, and showed that, at least for mongo plants, infrared light is more important than ultraviolet light in stimulating plant growth.

Mr. David Beach

NAME: Haruka Itakura
HOME ADDRESS: 2-7 Hanazawa-cho, Kugenuma, Fujisawa-shi, Kanagawa-ken, Japan
SCHOOL: Zama American High School, Camp Zama, Japan
SPONSOR/TEACHER: Lee Forrest
TITLE: The Effects of a Detergent Containing a Non-ionic Surfactant — Polyloxyethylene Alkyl Phenyl Ether on Killifish.

A detergent containing a non-ionic surfactant — polyoxyethylene alkyl phenyl ether, currently sold on the Japanese market, claims to be harmless to humans. The object of this investigation was to determine if the detergent is, in fact, harmless. The validity of the claim was to be inferred from the effects it had on killifish.

The experiment consisted of observing the effects of a solution of non-ionic surfactant on killifish at different concentration levels and comparing those effects with the effects of soap and detergent.

Results were that, at the two lowest levels, 30% of the fish died in the 4 ppm concentration solution and 50% in the 5 ppm concentration (37 hours LC = 500,000). No fish died in the soap and in the detergent solutions at higher concentration levels. The control group (0 ppm) remained unchanged and healthy.

It was concluded that the solution was lethal to killifish, the minimum lethal concentration level being 5 ppm, and that detergents such as this should be recognized for their potentially harmful effects on humans and the ecological environment.

NAME: William E. Wagner
HOME ADDRESS: PO Box 1863 Camp Foster
SCHOOL: Kubasaki High School
SPONSOR/TEACHER: Jane Larson
TITLE: The Effect of Visual Stimulation on a Bicycler's Performance.

This research attempted to determine whether video stimulation can cause an increase in a rider's speed on an exercise bike. Two tests were performed, one without the visual stimulation and one with the visual stimulation. A video tape of two minutes duration was prepared by filming progress on a road by a rider in a car. Speed varied from twenty kph during the first minute to forty kph the second minute. Subjects performed two tests by pedaling an exercise bike, first with no visual stimulation, and then watching the video in front of the bicycle. The speedometer reading was recorded every fifteen seconds. It was found that subjects pedaled at a steady pace without the visual stimulation. The subjects slightly changed their speed according to ideomotor responses to the video. The t-test showed no significant difference in speeds attained with and without watching the video.

From L to R
Haruka Itakura, Mr. Anthony Ferrante, Stacy Waugh, Mr. Dennis Edwards, Hsun Hua Chou, William Wagner and Mrs. Jane Larson.

ABSTRACTS OF OUTSTANDING STUDENT PAPERS OF JSHS 1990

NAME: Wenimar Salvador & Chaviess McGillivray
HOME ADDRESS: PSC #3 Box 15515, APO San Francisco, CA 96342
SCHOOL: Wagner High School, Clark Air Base, Philippines
SPONSOR/TEACHER: Mr. Byron Wood

TITLE: The Effect of Growth Factors and Inhibitors on the Morphology E. coli

This research was conducted to determine the effects of growth factors and inhibitors on the morphology of E. coli.

Under normal conditions, E coli grows as small, gram-negative, bacillary cells. The bacteria was subjected to various growth factors, such as amino acids and glucose. In addition, the bacteria was exposed to growth inhibitors — antibiotics such as penicillin and tetracycline.

The results indicated that the metabolic processes of the E. coli are specific to the nutrients in the environment. It was found that it is possible for an introduced factor to inhibit a particular enzymatic process which synthetically produces a necessary component vital to the physiology of the bacteria.

ABSTRACTS OF OUTSTANDING STUDENT PAPERS OF JSHS 1985

NAME: Christopher B. Davis, Science Laureate, First Place Winner
HOME ADDRESS: Seoul, Korea
SCHOOL: Seoul American High School
SPONSOR/TEACHER: Mr. Ivan Hristov

TITLE: "Eradication of Bacteria"

This research paper was developed from research in my mother's junior year of high school. Her project determined amounts of coliform bacteria present in the Columbia and Yakima Rivers in Washington State. She treated water samples with ultraviolet light to check the feasibility of using ultraviolet light as a viable method of water treatment projects. Her research concluded that ultraviolet light was an effective method for water treatment.

The intent of this project is to extract and identify bacteria present on Korean cabbage and treat them with ultraviolet light. Treatment of cabbages with ultraviolet light is to determine if it is a viable, commercially feasible method of eradicating bacteria. Presence of E-Coli bacteria could indicate the use of human sewage as fertilizer, often called "night soil." Use of "night soil" as a fertilizer is a common practice in South Korea.

ABSTRACTS OF OUTSTANDING STUDENT PAPERS AT JSHS 1985

NAME: Gary A. Cecchine III, Second Place Winner
HOME ADDRESS: HQ 19th SupCom, ATTN: EANC-IG, APO San Francisco 96212
SCHOOL: Taegu American School
SPONSOR/TEACHER: Mr. Edgar Mason

TITLE: "The Effects of Dexamethasone and Related Steroids on the Learning Abilities of Male White Mice"

Although a great variety of synthetic steroids is utilized in clinical procedures today, their effect on the learning abilities of animals is yet to be completely understood. The objective of this project is to determine if dexamethasone, a typical representative of all synthetic glucocorticoids, has any effect on the learning capacity and ability of a simple mammal, the white mouse.

Ten mice were divided into two equal groups. Each mouse in the experiment group is injected with a constant and equal amount of dexamethasone regularly. Daily, each mouse is placed in an isolated cage with a light at one end. When the mouse touches the light, he is rewarded promptly. A change in the amount of time that the mouse requires to touch the light once he is placed in the cage indicates that learning has taken place.

Analysis of the data to this time indicates that no major deviation of learning abilities is present between the dexamethasone-subjected mice and the norm. However, it is not possible at this time to conclude upon the long-term effects of the glococorticoid.

ABSTRACTS OF OUTSTANDING STUDENT PAPERS OF JSHS 1985

NAME: Emiko Kanayama, Third Place Winner
HOME ADDRESS: Sagamihara-shi, Higashi Onuma 2-14-4, Kanagawa
SCHOOL: Zama High School
SPONSOR/TEACHER: Mr. James Szoka

TITLE: "Muscle Sounds"

The muscles of the human body generate sound as they continually contract and relax. Muscle sounds are normally inaudible because the human ear is insensitive to low frequency sound. The object of this project was to compare muscle sounds among individuals with different muscle masses when force was exerted.

Three males and three females with different upper arm muscle masses but having approximately the same amount of skinfold fat did curls with a 3 kg. weight until they felt their biceps muscle strain. The muscle sounds of the strained muscles of each individual were measured by a fetal stethoscope attached to an oscilloscope.

After analysis, it was concluded that the sound produced by the contracted muscle was higher in voltage than the sound produced by the relaxed muscle. Also those individuals with larger upper arm muscle masses produced even higher voltage muscle sounds than those individuals with small upper arm muscle masses.

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TSUKUBA IBARAKI PREFECTURE, JAPAN

NAME: John Tucker
HOME ADDRESS: Box 70-K San Francisco 96651
SCHOOL: George Dewey High School, Subic N.B. Philippines
SPONSOR/TEACHER: Ms. Ruth Hopkins
TITLE: Relative Effect of Surface Oil on Wave Heigh And Period in a Wave Tank

The objective of this research was to find the relative effect of three very small concentrations of surface oil on paddle period and height. The procedure used a variable frequency wave generator in a wave tank and a computer which monitored the wave period, paddle period and wave height. The researcher compared the wave period and heights between the control group and three groups identified by differing concentrations of surface oil for three different paddle priods. The rearcher found that adding surface oil tended to increase frequency and height of the wave. The initial addition of surface oil tended to increase the wave frequency, but additional increase in surface oil tended to decrease frequency. The addition of increasing amounts of surface oil tended to increase the wave height.

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TSUKUBA IBARAKI PREFECTURE, JAPAN

NAME: Ted A. Manning
HOME ADDRESS: PSC Box 6439, APO San Francisco 96519
SCHOOL: Robert D. Edgren High School
SPONSOR/TEACHER: Mr. Robert E. Manning
TITLE: A Computer Program to Aid the Learning of Japanese Katakana

Although the Japanses language is not consisered to be a difficult language to learn to speak, it is very difficult to learn to write. This project involved the writing of a Computer Aided Instruction program (CAI), to help a Japanese I class learn Katakana. Katakana is an alphabet of symbols which represent phonetic syllables.

In the teaching of Katakana, the teacher shows the student how to write each symbol, how to pronounce it, and how to use it. Individual practice with the symbols is essential for learning, but the teacher cannot teach all of the students individually. Furthermore, students are rarely motivated enough to study on their own.

A computer program as a teaching aid can be used individually by students. A work adventure was written for this purpose because a game creates higher motivation than a drill type of CAI. Playing the adventure requires reading, and since part of the text is displayed in Katakana, the player receives paractice in reading these symbols as he progresses through the game. The program was written on an Exidy Sorcerer personal computer in the BASIC language. It was designed to include most of the Katakana symbols t ensure complete practice. To test the effectiveness of the program, an experiment will be implemented using a Japanese I class.

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TSUKUBA IBARAKI PREFECTURE, JAPAN

NAME: Christopher C. Zeitvogel
HOME ADDRESS: PSC #1, Box 28076 APO San Francisco 96230
SCHOOL: Kadena High School
SPONSOR/TEACHER:
TITLE: Effects of Pesticides on the Growth of Okinawan Soil Bacteria

This project's objective was to determine at which levels insecticides which are applied to or leached into the soil begin to affect bacteria living within the soil. Samples of baygon, chlorodane, lindane, and malathion were obtained, along with data indicating use and application strength. Ten different concentrations of each insecticide were tested, as well as the insecticide at full strength. Baygon was found to allow bacterial growth at a concentration half of its application strength. Chlorodane did not allow growth at any of the levels tested, including application strength. Lindane allowed growth at .009%. Malathion allowed growth at one-fifteenth of it's application strength.

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TSUKUBA IBARAKI PREFECTURE, JAPAN

NAME: Keener, Erin
HOME ADDRESS: Scientific Evaluation Team APO San Francisco 96343
SCHOOL: Zama American High School
SPONSOR/TEACHER:
TITLE: The Effects of Copper, Iron, and Lead as Pollutants on the Silkworm, Bombyx Mori - A Preliminary Study.

The research objective was to determine the effects of heavy metal pollution, a modern day threat to the sericulture industry, on the silkworm, Bombyz mori, using copper, iron, and lead as test variables. Prior to experimentation, approximatley 700 silkworms were observed for four months. Careful observations and developed procedures were logged daily. Artificial hatching was executed using the egg dipping procedure. Commercial sericulture techniques were surveyed at the Atsugi Silkwarm Center. The experiment was conducted as follows. Solutions of known concentrations were made, one solution per metal, and different volumes of the solutions were added to artificial food to produce concentrations ranging from 1 pt/10 - 1pt/100,000. Two trials were conducted, A and B. Trial A was unreliable because of the measuring unit involved and because of uncontrollable genetic variation among the worms. Therefore, Trial B was conducted under more controlled conditions. The mass of the worms, droppings, leftover food, and fresh food were calculated and recorded every other day. There was no pattern in the resulting disorders corresponding to group, metal or concentration. The control group was the healthiest in both trials, and lead was the least toxic of the three metals.

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TSUKUBA IBARAKI PREFECTURE, JAPAN

Name: Ngo, J. Thomas
HOME ADDRESS: PSC #3, Box 15658, APO, San Francisco 96432
SCHOOL: Wagner High School
SPONSOR/TEACHER: Mr. Garold Means
TITLE: Computer Simulation of Lunar Capture

Three major theories are now used to explain the origin of the moon. One of these is the theory that the moon accreted separately from the earth, and became its satelite by being captured in the earth's gravitational force field. A computer simulation was used to derermine how feasible such a capture would be. None of the trials showed a successful capture because the earth attracted the moon prior to the calculated rendezvous, causing it to pass very close to the earth and accelerate in an unplanned way. The researcher lacked the mathematics required to preform such predictions; research halted.

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TSUKUBA IBARAKI PREFECTURE, JAPAN

NAME: Sutton Michael S.
HOME ADDRESS: PSC Box 5779, APO San Francisco CA 96519
SCHOOL: Robert D. Edgren High School
SPONSOR/TEACHER: Mr. Robert Manning/Dr. Charles Solberg
TITLE: An Investigation to Determine if There is A Correlation Between Long-Distance Running and Academic Achievement

The objective of this research was to determine if there is a correlation between long-distance running and academic achievement in high school. The procedure was to use grade point averages of cross-country runners and non-team students. By comparing the grade point averages of the runners and the grade point averages of the non-team students, it was found that the runners as a group, had the higher grade point average. Dr. Kenneth Cooper's classification for the 1.5 miles aerobic test were used as a basis for ratings cross-country runners into fast and slow categories. By comparing the fast runners' grade point averages to the slow runners' grade point averages, it was found that the group average was higher for the fast category. If evidence of a significant positive correlation between long-distance running and academic achievement is shown through further analysis, the research will be expanded to try to determine the reason this correlation exists.

APPENDIX H

LIST OF VIDEO TAPES TO HELP STUDENTS PREPARE

AVAILABLE VIDEO TAPES

Several video tapes are available to help student prepare for the Symposium and to help them with their research. They are listed below:

1. "The Scientific Method" This is a detailed discussion of the scientific method and the research process by Dr. Howard Liljestrand of the University of Texas at Austin.

2. "Student Presentations" - Usually several tapes are available under this title. These tapes cover the actual formal presentations made by students at the Symposium the previous year.

3. "Field Trips" These tapes cover the field trips taken be symposium students the previous year.

4. "Guest Speaker" This the keynote speakers address from the previous year.

5. "Japanese - American Cultural Interchange" This tape covers the Japanese-American party usually held on Wednesday evening of the Symposium week.

6. "Poster Sessions" These tapes cover the informal presentations made the previous year by participants of the poster sessions.

7. "Banquet" This tape covers the Symposium opening night banquet.

The tapes may be borrowed from the District Superintendent of Schools for Japan or JSHS coordinators may obtain a copy of any or all of the tapes. To either obtain your own copy of one or more tapes or borrow the tapes, contact Takashi Suyama at AUTOVON 225-3940/3941/3946/3947. To obtain copies of the tapes for your school, you must provide Mr. Suyama with blank tapes.